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JUN 16 1948

Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

VOLUME 126, No. 24

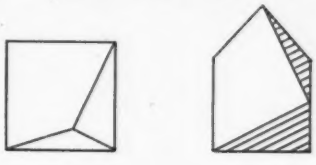
JUNE 10, 1948

THE FLY'S SHORTEST PATH

Imagine a room that is 30 feet long, 12 feet wide, and 12 feet high. Parts of each of the two end walls and one side of the room are shown in the drawing above. Now imagine a fly resting on the center line of one of the end walls at a point just one foot below the ceiling. On the center line of the opposite wall exactly one foot above the floor is a blot of honey. . . . The fly naturally wants to get to the honey as fast as he can. What is the shortest possible route he can follow by crawling along the surfaces that enclose the room, and how long is this route?

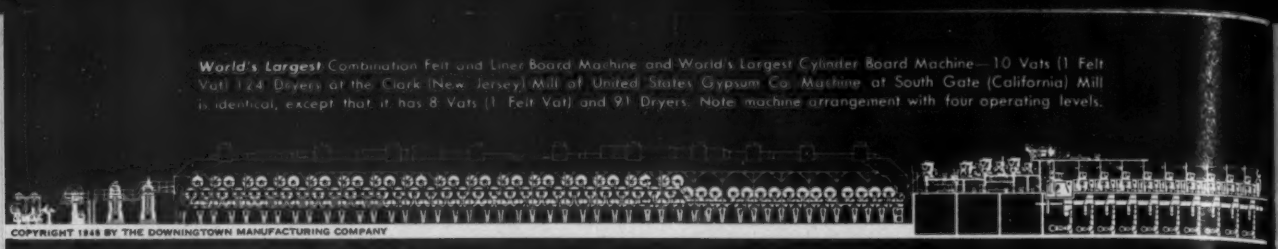
Sorry, we won't have another front cover until September. So, if you want the solution to this puzzle, simply send us a postcard or letter and we'll be glad to forward the solution to you.

LAST MONTH'S PUZZLE SOLUTION



ASTEN DRYER FELTS

ASTEN-HILL MFG. CO., PHILADELPHIA • ASTEN-HILL LTD., VALLEYFIELD, QUEBEC



World's Largest Combination Felt and Liner Board Machine and World's Largest Cylinder Board Machine—10 Vats (1 Felt Vat) 124 Dryers at the Clark (New Jersey) Mill of United States Gypsum Co. Machine at South Gate (California) Mill is identical, except that it has 8 Vats (1 Felt Vat) and 91 Dryers. Note machine arrangement with four operating levels.

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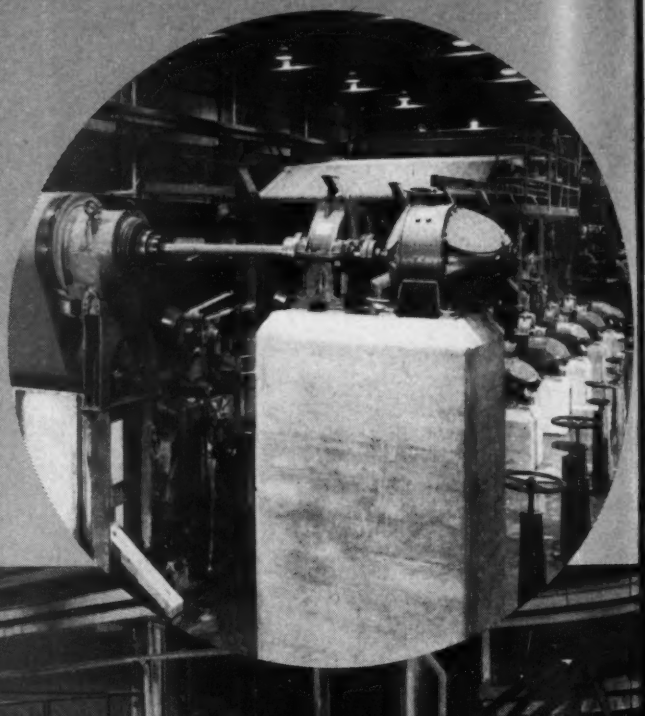
CONTRACT UNIQUE

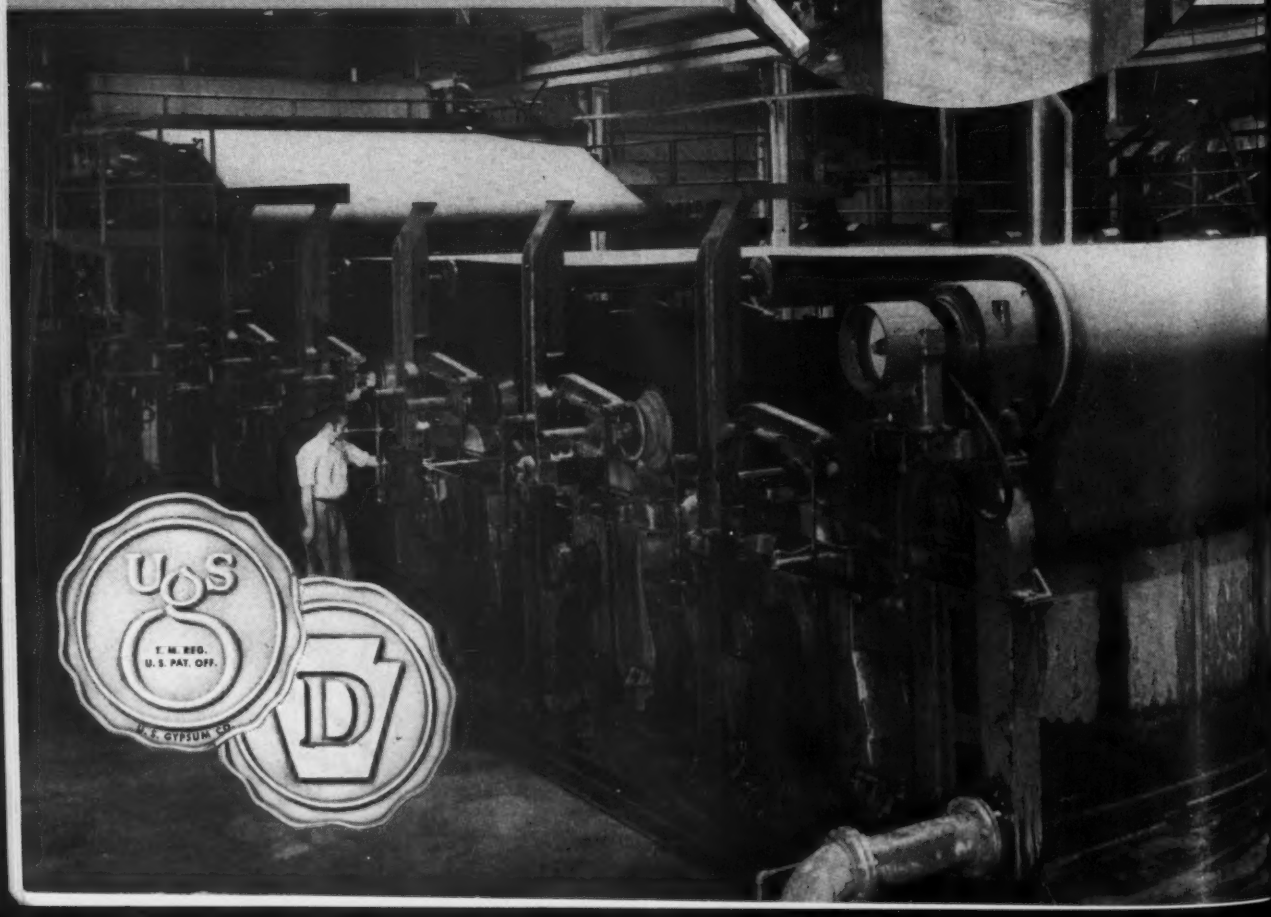
★ ★ ★ **18**

Vats and Hoppers ★

of Stainless Steel—Cylinder Moulds 60 inch and 48 inch diameter . . .

This and more is "Contract Unique" . . . complete manufacturing equipment "from raw material to finished product" for two new mills of the United States Gypsum Co., including the designing and building of two High Capacity Cylinder Machines and the furnishing of all Stock Preparation Equipment in both mills. "Contract Unique" is the biggest in size, scope and responsibility in the annals of the paper industry. ***Downingtown Manufacturing Co., Downingtown, Pa., Designers and Builders — Paper Making Machinery.***





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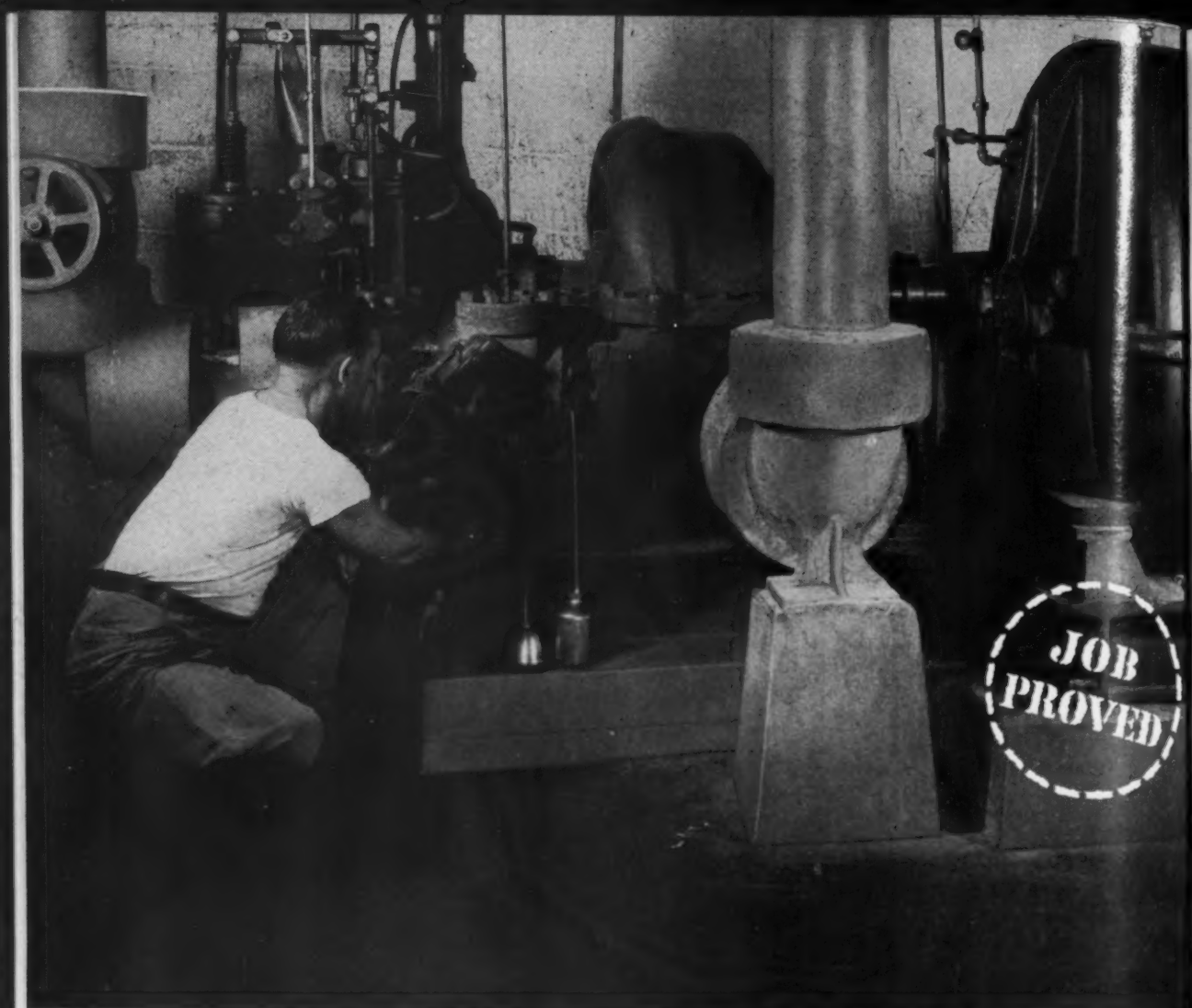
CALENDAR OF COMING EVENTS

JUNE 11-12: Annual Convention, Paper & Twine Ass'n., French Lick Springs Hotel, French Lick Springs, Ind. For details, address John L. Richey, secretary-treasurer, Suite 651, Hotel Sinton, Cincinnati, Ohio.

JUNE 24-26—Wisconsin Power Conference and Exposition, Northland Hotel, Green Bay, Wis. For details, write to Al DeGroot, conference secretary, 515 North Irwin avenue, Green Bay, Wis.

OCTOBER 12-16: Fifth National Chemical Exposition, Coliseum, Chicago, Ill. For details, write to Marcus W. Hinson, manager, care of Chicago Section, American Chemical Society, 1505 South Wabash avenue, Chicago 5, Ill.



NO SLUDGE, NO RUST, NO CORROSION

Sunvis 900 Oils Still Like New After 3 Years' Service — Gears and Bearings Show No Wear

In October 1945 a paper mill started up a turbine which had been idle during the war. Sunvis 900 Oils were put in the circulating system and the bath-lubricated gear reduction unit. The operating temperature was about 140°F.

Today, nearly three years later, this equipment still runs on Sunvis 900 exclusively. It requires little makeup. The oils go unfiltered and untreated. No sludge has formed. During the last two summers the equipment stood idle for a few months, exposed to inevitable condensation. Inspected recently, the gears and bearings showed no measurable wear, and were free from rust and corrosion, despite the intermittent operation. The oil is in excellent condition, although never changed.

In all major industries, similar excellent results are being obtained by companies which have adopted Sunvis 900 Oils for preventive maintenance. Sunvis 900 Oils are fortified to resist deterioration and to protect metal parts against rusting and corrosion. These long-lasting, top-quality oils *keep productive machinery running longer*. They can do the same for you. Call your nearest Sun Office, or—for a copy of the illustrated booklet "Sunvis 900 Oils"—write Department PT-6.

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Paper TRADE JOURNAL

VOLUME 126, NO. 24 REG. U.S. PAT. OFF. JUNE 10, 1948

Northwest Flood Damage Report

FLOOD REPORTS from the northwest prompted PAPER TRADE JOURNAL to make a telegraphic survey of the mills in Washington, Oregon and Vancouver, B. C., to determine the extent to which they were affected by the swirling waters.

Verbatim responses to this inquiry, which was worded: "Have floods damaged your property, halted or interrupted production? If so, how? Or did you escape?" are presented herewith:

Anacortes Division, Coos Bay Corp.
Anacortes, Wash.

No damage from floods. Mill operating at capacity.

British Columbia Pulp & Paper Co.
Vancouver, B. C.

Woodfibre, Port Alice, located seacoast. Not subject floods. No damage. Operation unhindered.

Columbia River Paper Mills.
Portland, Ore.

Flood has interrupted production Columbia River paper mills. However, no damage to paper, raw materials or, as far as we know, to machinery. Will resume operation within few days after flood recedes. Oregon Pulp & Paper Co. not affected.

Coos Bay Pulp Corp.
North Bend, Ore.

Our plant located on coast. No flood damage here.

Crown Zellerbach Corp.
Lebanon, Ore.

No flood damage at this division.

Crown Zellerbach Corp.
Port Angeles, Wash.

No flood damage or interruption of production at this mill as we are not in territory affected by swollen rivers.

Crown Zellerbach Corp.
Oregon City, Ore.

Floods have not damaged property or interrupted production at West Linn Division. Reason we have not been affected is that we are sufficiently upstream on Willamette River that backwater did not get high enough to affect operations.

Crown Zellerbach Corp.
Portland, Ore.

Floods did not affect our West Linn mill but with the exception of one machine our Camas mill has been completely down for ten days and will remain down another week or ten days depending on river stage. We lost approximately three million feet of logs from storage grounds, although substantial portion may be salvaged later. Main damage to plant proper will consist primarily of clean-up, painting, electrical connections, etc. All paper and supplies removed from lower levels before high water reached them.

Everett Pulp and Paper Co.
Everett, Wash.

We have had no damage, and have been operating right along. The only thing that might come up is that, due to the condition on the Columbia River, it interferes with power production on the Columbia and there might be some

(Continued on page 43)

Congress Opens Industry's Bids On Third Quarter Paper Need

WASHINGTON—Bids were opened on June 7 by the Joint Congressional Committee on Printing for paper for the use of the Government Printing Office for the three-mont period beginning July 1, 1948.

Awards will be made by the Committee on June 14 and published in *Paper Trade Journal* in the June 17 issue.

The bids were as follows—where no bid is shown, the Government's requirements were not met, but are printed for the record only.

Newsprint

No. 1—2,000,000 lbs., 24x36—64; rolls, 19, 24, 36, and 48 ins. wide, 36 inches in diameter (3-inch fiber cores).

Catalog News

No. 2—40,000 lbs., 24x36—45; rolls 28, 38, and 48 ins. wide, 36 ins. in diameter (3-inch fiber cores). (Weight of cores and wrappers shall be included in the net weight.)

Walker, Goulard, Plehn Co.	.09747c

Machine-Finish Book

No. 3—300,000 lbs., 25x38—70; flat, cut any size, min. 21 ins., max. 48 ins.

Mudge Paper Co. (100,000 lbs. only.)	.1166c
Mead Sales Co.	.1167c
Paper Corporation of America	.169c
Walker, Goulard, Plehn Co.	.1173c
Paper Corp. of U. S. (Lots 3, 4, 5 600,000 lbs.)	.1121c

No. 4—225,000 lbs., 25x38—70; flat, cut 24x38, 28x38, and 38x48 ins.

Mudge Paper Co. (100,000 lbs. only.)	.1166c
Mead Sales Co.	.1167c
Paper Corporation of America	.169c
Walker, Goulard, Plehn Co.	.1173c
Paper Corp. of U. S. (Lots 3, 4, 5 600,000 lbs.)	.1121c

No. 5—225,000 lbs., 25x38—70; flat, cut 24x38, 28x38, and 38x48 ins.

Mudge Paper Co. (100,000 lbs. only.)	.1166c
Mead Sales Co.	.1167c
Paper Corporation of America	.169c
Walker, Goulard, Plehn Co.	.1173c
Paper Corp. of U. S. (Lots 3, 4, 5 600,000 lbs.)	.1121c

No. 6—50,000 lbs., 25x38—70; rolls, 28½ ins. wide, 36 inches in diameter (3-inch fiber cores).

Mudge Paper Co.	.1082c
Mead Sales Co.	.1072c
Paper Corp. of America	.159c
Wilcox, Walker Furlong Paper Co.	.1085c
Walker, Goulard, Plehn Co.	.10858c
Paper Corp. of U. S.	.1071c

No. 7—225,000 lbs., 25x38—70; rolls, 19 and 38 ins. wide, 36 inches in diameter (3-inch fiber cores).

Mudge Paper Co. (100,000 lbs. only).	.1082c
Mead Sales Co.	.1072c
Paper Corp. of America	.169c
Wilcox Walker Furlong Paper Co.	.10185c

(Continued on page 44)

UPPER LEFT—W. S. Wilson of the Monsanto Chemical Co. Mr. Wilson was co-author of a paper read at the meeting on the subject of wet break sizing test for paper. UPPER RIGHT—H. A. Spencer of Knowlton Bros. Co., delivered a report on "Routine Mill Testing Methods." LOWER LEFT—Homer Rice, co-chairman of the meeting, and Laurence Livingston, guest speaker at the Friday evening dinner. Both men are with E. I. du Pont de Nemours, Inc. LOWER RIGHT—Harry Smith of the Syco Corp., Syracuse, N. Y. Mr. Smith authored and read a paper describing various types of paper machine drives.

Dr. Foote Heads Empire State Section of TAPPI

WATERTOWN, N. Y.—Dr. James E. Foote was elected chairman of the Empire State Group of the Technical Ass'n. of the Pulp & Paper Industry at the meeting of that group at Hotel Woodruff, June 3-5. Earl Foster was elected vice-chairman, and Ralph Prince, secretary-treasurer.

Dr. Foote is connected with the Berst-Forster-Dixfield division of the Diamond Match Co., Plattsburg, N. Y.; Mr. Foster is technical director of the Sealright Co., Fulton, N. Y.; and Mr. Prince is connected with the New York City office of the American Cyanamid Co.

June 3, opening day of the gathering, was devoted to registration, followed by a get-together cocktail party.

June 4 was occupied with business sessions and a round table discussion in the morning, a luncheon at noon, golf, sightseeing and mill visits in the afternoon, a cocktail party at the Bagley & Sewall Co. late in the afternoon, and a dinner dance in the evening.

June 5 started with a morning business meeting, followed by a buffet luncheon at the Jefferson Country Golf Club, golf in the afternoon, and another dinner dance in the evening.

Papers read at the meetings included: "Determination of Sizing by the Wet Break Test," by W. S. Wilson and G. E. Niles of the Monsanto Chemical Co.; "Syco Drive," by Harry Smith, sales manager, Syco Mfg. Co.; "The Effect of Petroleum Base Additives in Sulphite Pulping," by Warren A. Beman and H. E. Corbin of the Vacuum Oil Co.; and "Routine Mill Methods," by H. A. Spencer, technical director of Knowlton Bros., Inc. Round table discussion was led by Dr. Foote. The Allis-Chalmers sound-color movie, "Steambarker and the High-Density Feeder," was screened. Interesting uses of nylon and polythene were demonstrated by Laurence Livingston of the duPont Co.

Visits were paid to the mills of Knowlton Bros., in Watertown; the Dexter Sulphite Co., at Dexter, and the St. Regis mill at Deferiet.

Attendance was at a record high—registrations topping the 300 mark.

Left to right: Dr. James Foote, chairman; Earl Foster, vice-chairman; Ralph Prince, secretary-treasurer.

New England Paper Merchants Schedule Heavy Program

BOSTON—Agenda at the luncheon meeting of the New England Paper Merchants Ass'n., June 1 at the Parker House, this city, and a dinner meeting at the Hotel Bond, Hartford, Conn., June 2, included "Increased Transportation Costs Study," "Paper Distributing Trade Statistics," "A Public Relations Program for NPTA Members," and the Gummed Industries Association sound film and presentation.

Speakers at both meetings were Willard C. Leathers, executive assistant, NPTA; George W. Shine, NPTA; Frank A. Devore, Gummed Industries Ass'n.; Floyd H. Blackman, D. F. Munroe Co., Boston; Donald L. Gibbs, Kendall Paper Co., Cambridge; and Norman E. Scott, executive secretary of NEPMA.

Paul M. Jones, president of NEPMA, presided at the Boston meeting, which was for Eastern Massachusetts, Worcester, Rhode Island, Maine, Vermont and New Hampshire members, both Fine and Wrapping Paper.

Queen Charlotte Timber "Only Scratched"

VANCOUVER, B. C.—Timber resources of the Queen Charlotte Islands, off the northern British Columbia coast, are reported to as yet be only scratched. G. A. Hunter, Prince Rupert, B. C., who recently made a survey of this area, reports that the 12-mile Cumshewa Inlet on the east coast of Moresby Island is at present an important timber source for approximately 500 men bringing out logs for the Powell River Co. and for Pacific Mills Ltd., at Ocean Falls.

There are also about 175 men working at Sandspit on the northeast end of Moresby Island on a project for Pacific Mills. The great Sitka spruce stands of the Queen Charlottes were first brought to prominence during World War I and were again utilized to advance in supplying war materials during the recent conflict.

It is claimed that the spruce and hemlock stands of the Queen Charlottes have been merely scratched and now new government policy of sustained yield logging will provide a perpetual supply of lumber.

Today permanent residential camps are springing up on the Queen Charlottes, the most outstanding being that of Northern Plywoods, a subsidiary of Pacific Mills, erected at Sandspit, where George Fyfe is superintendent. This camp has about 175 persons.

The old A. P. Allison Logging Co., which operates the only logging railway on the Queen Charlotte Islands, is now the "Aero Camp" of the Powell River Co. It is managed by George Bell and employs 175 men. The nine-mile railway permits the crews to live at a beach camp and work in the woods.

The Powell River Co. also has a camp at Mathers Lake, where 60 men are employed, and where logs are hauled by trucks to the beach at Church Creek where another camp is being established. Axel Ostrom is the superintendent here.

The company's focal point of Queen Charlotte operations is its rafting camp at Beatty anchorage where 20 men are engaged in building both Davis and flat rafts in which the logs are towed across Heacate Straits and down the inside passage to the mills.

Approximately 100 men, under George Kennedy are employed in the Cumshewa Inlet operations of the Northern Pulpwoods at the former Morgan camp. The Powell River Co. has now acquired the old Aliford Bay air force property and will, it is anticipated, open up considerably enlarged logging activities in the Queen Charlottes.

Queen Charlotte City, which is located on the southern shore of Graham Island on Skidegate Inlet is the geographical center of the Queen Charlottes and also the center of the timber and fishing industry of the islands. Its population has considerably increased and now numbers around 500. Some 50 fishing vessels make their headquarters at Queen Charlotte City or Skidegate, while immediately adjacent to Queen Charlotte City are the four million feet timber limits of the Powell River Company, which when opened up will again make Queen Charlotte City a booming logging town just as it was once a thriving sawmill town.

Bishop Blames Britain's Newsprint Quandary on U. S.

LONDON — Britain's paper mills are producing only about 27 percent of their capacity because of the "Government's failure to supply the raw material," F. P. Bishop, general manager of the Newsprint Supply Co., said on June 1.

Mr. Bishop was commenting upon a statement made by Cranston Williams of the American Newspaper Publishers Ass'n., who contended that if Britain imported woodpulp instead of finished newsprint there would be three times as much of the latter available in Britain for the same outlay.

While the company, which is the British publishers' central distributing agency for newsprint, is urging the Government to increase imports of woodpulp, Mr. Bishop asserted that newspaper publishers in the U. S. "would like to see the whole of the Canadian newsprint diverted to America," and added:

"We are not asking anything from America. We are only asking to be allowed to carry out our own contracts, which would mean that the same proportion of the British newspapers' supply of newsprint would come from Canada and Newfoundland as before the war."

British News Print Shortage Largely Self-Inflicted?

NEW YORK — Cranston Williams of the American Newspaper Publishers Ass'n., in a letter to the *New York Times*, said in part:

"United States newspapers would like to see Britain have bigger newspapers, but there seems to be no disposition on the part of the British Government to do anything now which would bring this about. . . . The British Government is warning of a further reduction of newsprint inports to the United Kingdom. . . . Idle machines in England would permit production at the rate of 550,000 additional short tons per year if raw materials were available. This additional newsprint would permit the British newspapers to increase their size from four to eight pages. . . . Cost of pulpwood, according to my information, would be roughly one-third the cost of finished newsprint, and that would represent the only expense incurred by the British newsprint industry requiring payment in Canadian or U. S. dollars through the ECA. Therefore, for the same amount of U. S. dollars there would be three times as much newsprint available in England either for consumption by the British newspapers or for shipment to other European countries."

Food Processing and Container Manufacturing Know-How Pool

CHICAGO—An organization known as Associates of Food & Container Institute of the Armed Forces was formed on June 3 to bind together major companies in the fields of food processing and container manufacture. Others to be identified with the group are educational institutions, representatives of the armed forces, and observers from civilian agencies of the government.

Purposes of the organization are: (1) To promote dissemination of fundamental scientific information pertaining to foods and containers; (2) function as a clearing-house on fundamental research activities; (3) evolve and maintain a research mobilization plan; (4) encourage scientists to engage in research; (5) determine fundamental research problems; (6) minimize unnecessary duplication of research; (7) keep associates informed of the Institute's activities; and (8) assist the Institute with technical information relating to industrial experience and practice.

President of the organization is Dr. B. S. Clarke.

Pulp Finch Paralyzing German Paper Production

BERLIN — Military Government officials in the bizonal area of Western Germany predicted on June 1 that paper and pulp production this year will not rise above 50 percent of the 1936 level, because of pulp shortage.

Newsprint output in the bizonal area reached a postwar high of 6,235 tons in March, but the paper manufacturing program for the 12 months ending March, 1949, contemplates an output of only 67,200 tons.

Overall output of paper of all kinds is programmed at 480,000 tons.

Newsprint Bill to Truman

WASHINGTON—The Senate on June 1 passed and sent to the White House a bill extending until July 1, 1949, the authority for duty-free importation of newsprint 9 to 15 inches wide. This authority now is slated to expire at the end of this month.

Power Conference-Exposition Green Bay, Wis. June 24-26

GREEN BAY, Wis.—The Associate Engineers and Supplymen of Wisconsin will hold a three-day Power Conference and Exposition at the Northland Hotel, June 24-26, in conjunction with the annual state meeting of the National Ass'n. of Power Engineers. The gathering is expected to draw attendance from all over Wisconsin and upper Michigan, R. S. Critchton of the AE&S, stated to PAPER TRADE JOURNAL.

Features of special interest to paper men on each of the three days include:

June 24—Address by C. E. Imhoff, director of laboratories and research, water conditioning department, Allis-Chalmers Mfg. Co., and Otto de Lorenzi, director of education, Combustion Engineering Co. Mr. Imhoff will speak on "Prevention of Turbine Blade Deposits" and Mr. de Lorenzi on "A Study of Stoker Fuel Beds," illustrating his address with a color-film.

June 25—Engineering Panel Discussion. Prof. Ben G. Elliott, in charge of mechanical engineering, University of Wisconsin, will serve as chairman, assisted by A. G. Behling of Milwaukee, P. A. Moe of Gates, Moe Weiss & Papenthien of Milwaukee, and A. E. May of Central Engineering. The latter three are consulting engineers. Their subject will be "Today's Steam Plant Problems."

Speakers on that day's program will include C. S. Leaf, wood processing machinery, Allis-Chalmers Mfg. Co., and Herbert Kingsbury, centrifugal pump department, of the same firm. Mr. Leaf's subject, illustrated with a color film, will be "The Case of the Barking Logs." Mr. Kingsbury's subject will be "Pumping High Consistence Pulp."

June 26—Dinner. M. J. Auchter, vice-president in charge of production of the Hoberg Paper Mills, Inc., will serve as toastmaster on this occasion.

The gathering is heralded as "an educational vacation."

Chicago Tribune's Straw Fiber Experiment Procedure

CHICAGO—Use of straw fiber as a substitute for some of the wood pulp in newsprint at the Chicago Tribune's Thorold, Ont., paper mill recently, was described by a *Tribune* writer as follows:

"Straw for the experiment was chopped by ordinary ensilage cutters and cleaned of chaff. It was then placed in a large spherical steam cooker where small amounts of sodium sulphite and soda ash were added.

"The mixture was cooked for two hours at a temperature of 340 degrees Fahrenheit and at a pressure of 100 pounds a square inch. It was then decanted onto a screen over a pit and the chemicals were washed away with water.

"Delivered into a refiner, the straw was mixed with water and agitated so that the fibers were set free from the other plant structure. They then passed through screens that held back any fiber bundles that had not been separated.

"After passing through the screens the thick fluid was partly dehydrated to a semi-solid mass. Bleaching powder was added to remove the yellowish color of the fibers, and then the material was washed again to remove the bleach residues.

"The white liquid was then mixed with ground wood and sulphite pulp. The former is wood fiber mechanically torn from logs, while the latter is obtained by cooking wood chips with chemicals. . . .

"The proportion of the straw fiber was varied from five to 15 percent of the total. Engineers said it might be possible to increase the proportion up to 25 percent."

Reiner Succeeds Schlanger

NEW YORK—Interboro Paper Trade Ass'n., last week elected Saul Reiner, president; Jack Arlind, vice-president, Benjamin Silverfine, treasurer; and Emmanuel Green, secretary. Mr. Reiner succeeds Daniel J. Schlanger, the Association's first president.

Arthur H. Stein, who was master of ceremonies at the meeting, spoke on "Our Credit Bureau" and Mr. Arlind on "Our Code of Ethics." Retiring president Schlanger was presented with a traveling case in appreciation of his services to the organization.

Firms comprising the Association are as follows: American Restaurant Supply Co.; Amsterdam Paper Co.; Bay Ridge Paper Co.; Bridge Soda Fountain Supply Co.; Carasso Supply Co.; Continental Supply Co.; Gilmore Paper Corp.; Green & Co.; Harlem Paper Products Corp.; Hunter Paper Co., Inc.; Ideal Restaurant Supply Co. Inc.; Imperial Bag & Paper Co. Inc.; Kaymar Paper Co.; Majestic Soda Fountain Supply Co.; Metropolitan Paper & Bag Corp.; Wm. Pinsker Co. Inc.; Royal Paper Co.; Benjamin Weil Co.; West Shore Paper Co.; and Yorkville Paper Co Inc.

James M. Todd Heads ASME

MILWAUKEE—James M. Todd, New Orleans consulting engineer, was nominated on June 2 as the next president of the American Society of Mechanical Engineers during that group's semi-annual meeting.

Formal election will take place in the fall, by letter ballot of the membership, which totals more than 25,000 engineers throughout the U. S. The 1948-49 term will begin at the end of the annual meeting next December.

Mr. Todd, who will succeed E. G. Bailey of New York as president of the society, is in private practice a consulting mechanical and electrical engineer at 217 North Peters Street, New Orleans. Other officers nominated are:

As regional vice-presidents: Arthur Roberts, Jr., chief engineer, Lynchburg Foundry Co., Lynchburg, Va.; Forrest Nagler, chief mechanical engineer, Allis-Chalmers Mfg. Co., Milwaukee; Carl J. Eckhardt, professor of mechanical engineering and superintendent of utilities, University of Texas, Austin; and Albert R. Mumford, development engineer, Combustion Engineering Co., New York. (Renominated.)

As directors-at-large: Jacob A. Keeth, manager of power production, Kansas State Power & Light Co., Kansas City, Kan.; and Ralph A. Sherman, assistant director, Battelle Memorial Institute, Columbus, Ohio.

Cubans Concerned Over Wood Pulp Supply

WASHINGTON—Cuban importers are reported as concerned over future pulp supplies for the domestic paper industry, in view of present world pulp-supply difficulties, according to the U. S. Dept. of Commerce.

Cuba's two paper and paperboard mills have an estimated combined productive capacity of nearly 30,000 tons of paper and about 7,000 tons of paperboard annually. Pulp shortage and labor difficulties have been handicaps to full production in the past, however, it is stated.

Because of declining availability and rising prices of waste paper in recent years, the Cuban paper and paperboard mills began experimental use of bagasse sometime ago, and pulp producing equipment was installed on a commercial scale later. Production at an estimated 25 tons per day could scarcely affect Cuban import requirements for woodpulp, the Department reports.

The most important items produced are wrapping papers and paperboard, although occasionally the mills have turned out some newsprint, bond writing papers, tissue, toweling and other items.

The bulk of Cuba's paper requirements is met by imports, principally from the United States.

Sloan Foundation Gives M. I. T. $225,000 Grant

CAMBRIDGE, Mass.—A grant of $225,000 to the Massachusetts Institute of Technology for a three-year program of research in the field of executive development and an educational program for a group of outstanding young business executives, has been an-

nounced by the Alfred P. Sloan Foundation.

The grant provides for reestablishment of the Sloan-Sponsored Fellowship program carried on for a number of years prior to 1942 and discontinued during the war. The new project, which will be a cooperative activity of the Departments of Business and Engineering Administration and Economics and Social Science of M.I.T., will be started again in the autumn of 1949. Professor Gerald B. Tallman has been appointed director of the program.

Fellowships will be awarded to young business executives who show outstanding promise for leadership in their own companies and for service to our industrial society. They will go to M.I.T., on leave-of-absence from their employing companies for a year of graduate work in the fields of business administration and economics, and will have an opportunity to become familiar with the fundamental problems with which business management deals.

Roy R. Miller of the Hammermill Paper Co., Erie, Pa., attended M.I.T.. under this program during the year 1941-42, June Sheehan, secretary of the Sloan Fellowship Program, told *Paper Trade Journal.*

Paper Replacing Burlap Bags

WASHINGTON—Growing substitution of paper bags for purposes formerly employing burlap was cited by burlap bag exporters as an argument for lifting all export restrictions on used burlap bags, in order to give new outlets for these bags, at hearings before the Office of International Trade.

The paper bag industry is making deep inroads into a market formerly dominated by the burlap trade, some industry representatives pointed out. Prior to the war, European countries provided an important market for used bags, and industry spokesmen said an open market abroad is essential to preserve these outlets.

Members of a burlap bag industry group attending the meeting unanimously said there is no shortage of burlap bags today. Many dealers in used burlap bags were reported to have excess inventories which they are unable to move on the domestic market.

An increasing number of states in this country have enacted laws against use of second-hand bags for packaging food, and some other commodities, further reducing home demand, it was stated.

Present regulations allow an open quota on used burlap bags for export, but a license is still required.

WAA Offers Carbon Plant

WASHINGTON—The War Assets Administration is inviting bids for purchase or lease of a government-surplus, channel-type carbon black plant near Monument, N. M. Sealed bids will be received by the WAA Office of Real Property Disposal, Temporary Building I, Washington, D. C., until 3 p. m. (EDST), July 1, 1948, when they will be publicly opened.

Succeeds Father On Riegel Board

GEORGE L. BIDWELL

G. LAMONT BIDWELL

New York—G. Lamont Bidwell has been elected to the board of directors of the Riegel Paper Corp., John L. Riegel, president of that firm disclosed on June 4. Mr. Bidwell succeeds his father, George L. Bidwell, who resigned after serving on the board for 34 years.

George L. Bidwell started with the Riegel Paper Corp., in 1896. He was named general superintendent in 1907, elected to the board of directors in 1914, and elected vice-president and general-superintendent in 1929. He retired in 1944.

G. Lamont Bidwell is manager of Riegel's Milford, N. J., plant. He joined the company in 1930 and became superintendent of the mill department at Milford in 1942. Mr. Bidwell was named manager at Milford in February of this year.

Frost New American Forestry Association Director

COLLEGE STATION, Tex. — S. L. (Jack) Frost resigned as acting director of the Texas Forest Service, effective June 30, to become executive director of The American Forestry Ass'n., Washington, D. C. President Gibb Gilchrist of Texas A. & M. College, reported on June 4.

Construction of Vancouver Island Sulphite Plant Started

VANCOUVER, B. C.—Erection of the $12,000,000 sulphite plant at Northumberland Strait, eight miles southeast of Nanaimo on Vancouver Island, has started. The new mill is being erected by the H. R. MacMillan Co., Ltd., of which H. R. MacMillan is president.

Mr. MacMillan states the Nanaimo site had been selected for its convenience in transporting chips and wood waste from the Vancouver Island operations of the company, and also from its Fraser River operations. The plant will be geared to produce approximately 200 tons of sulphite pulp daily. The new site is regarded as one of the finest in British Columbia from the standpoint of plant location and for permanent type employe homes.

The plant foundations are under construction and Mr. MacMillan states that machinery orders valued at over $3,000,000 have been placed. He expects the new mill to be in operation early in 1950, when it will employ 200 people.

A series of holding dams for Nanaimo lakes, high in the island mountains will assure the mill a year-round supply of water.

A spur track from the Esquimalt & Nanaimo Railway is planned.

Champion's Plate to Reinhold-Gould

NEW YORK — John Plate has joined the selling staff of Reinhold - Gould, Inc. paper merchant firm, Fred H. Pinkerton, vice - president and sales manager, reported on June 4. Mr. Plate was formerly with Champion Paper & Fibre Co., Hamilton, Ohio.

Philpott and English Added To P & TA Membership

CINCINNATI — Recently admitted to membership in the Paper & Twine Ass'n. are Richard Philpott of the Lily-Tulip Cup Corp., Chicago office, and H. B. English of the Kennedy Car Liner & Bag Co., Shelbyville, Ind.

Birthday Party—International Style June 14-19

NEW YORK—The biggest birthday party of its kind ever held in the United States will be celebrated throughout the country, the week of June 14-19, by the 31 mills and plants of the International Paper Co., in observance of the company's 50th anniversary, John W. Hinman, president, disclosed in a statement summarizing details of the affair.

The governors of Louisiana and Arkansas, the governor-elect of Florida, and the lieutenant governor of Mississippi, together with civic, business and religious leaders of communities from the Gulf to Maine, and westward to California, will join in the Golden Jubilee parties which will be held simultaneously in International's eight mills and six converting plants in the South, and six mills in the North. Eleven other plants of the company in the Northeast, Mid-West, and Far West will hold special parties for employes and special guests during the week.

At the same time, it was announced, the six pulp and paper mills and four affiliated organizations of Canadian International Paper Co., a separate Canadian enterprise, will hold simultaneous open house programs.

Summarized plans for the eight open house parties to be held by the 14 mills and plants in the South were announced by Major Friend as follows:

Gov. Earl K. Long of Louisiana will be the honor guest presiding at opening day ceremonies on June 14 of the celebrations at Bastrop, La., where the Bastrop and Louisiana Mills will join hands with the Multiwall Bag Plant and the Milk Container Plant in a joint four-installation party. Governor Long and his entourage will head a special program for civic and business leaders of the state and community who will make the initial tour of the company's four Bastrop installations and then attend a reception at the country club.

On June 16 and 17, the public will be invited to tour the two mills and two plants. On June 18, the day will be given over entirely to employes and their families, concluding with a barbecue in the afternoon and evening. At this time, special medallion awards will be presented by mill and plant officials to employes who have been with the company, or with mills and plants now operated by the company, for 25 years or more.

At Camden, Ark., Governor Ben T. Laney of Arkansas will preside at the June 14 opening day ceremonies at the joint celebration of the Camden Mill, and the Multiwall Bag Plant. The Governor and his party will head a group of state and community civic and business leaders who will make the first tour of the plant, after which a reception will be held at the country club.

On June 15 and 16, the public will be invited to tour the Mill and Bag Plant. On June 17, the program will be devoted to employes and their families, who will tour the two installations and attend a barbecue which will be the grand finale of the program, highlighted by the presentation of medallions to 25-year employes.

Headlining the opening day program on June 14 at Panama City, Fla., is Governor-Elect Fuller Warren of Florida, and his party, who will make the initial tour of the mill, in company with a special group of community civic and business leaders.

On June 15 and 16, the public will be invited to tour the mill and the program will be concluded on June 17, which will be set aside exclusively for employes and their families. On this day, families will tour the mill and take part in a barbecue-picnic. The highlight of this event will be the presentation, by mill executives, of special medallions to the 25-year employes.

Headlining the open house program at the mill in Moss Point, Miss., will be Lieutenant Governor Sam Lumpkin of Mississippi. Here, Lieutenant Governor Lumpkin will preside at a gathering consisting of civic and business leaders of the state, the community and adjacent towns.

The public will be invited to tour the mill on June 15 and 16, and the program will be concluded on June 17, when employes and their families will tour the mill and attend a barbecue at the end of the day. At this event, mill executives will present special medallion awards to 25-year employes.

The celebration of the Mobile Mill, and Grocery Bag Plant, at Mobile, Ala., headquarters of the Southern Kraft Division of the company, will get under way at 3:00 p.m., June 14. Presiding at the opening ceremonies with Major J. H. Friend, general manager of the division and vice-president of the company, along with state and community civic and business leaders, will be Frank W. Boykin, Representative from Alabama.

On June 15-18, the Mill and Bag Plant will be open to the public as well as to employes and members of their families. The concluding event of the week's program will be a barbecue-picnic and general outing exclusively for employes and their families, to be held at the Fort Whiting auditorium and grounds. As at all the other mills and plants, the feature of this day will be the presentation of special medallions to 25-year employes.

At Springhill, La., site of the Springhill Mill & Container Plant, the program will open June 14. Dr. Stoke, president of Louisiana State University, will preside among a group of state and

A FEATURE of all of the community open house programs will be an exhibit showing the products and end-products made by the International Paper Co., and its customers. Exhibit is 53 feet in length; 18 feet high. It is separated into three sections showing products of the Southern, Northern and Canadian mills and plants of the firm, respectively.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High Low and Last for Week Ending June 5, 1948

STOCKS

	High	Low	Last
A. P. W.	6½	6⅛	6⅛
Armstrong Cork Co.	54⅞	53¾	54¾
Armstrong Cork Co., 4 pf. 4	113½	112½	113½
Armstrong Cork Co., pf. 3¾	98¼	97½	97½
Celotex Corp.	32⅝	31¾	31
Celotex Corp., pf.	19	18⅝	18⅝
Certain-Teed Products Corp.	19¾	18¼	18¼
Champion Paper & Fibre Co.	26½	25¼	25½
Champion Paper & Fibre Co., pf.	100	97½	100
Congoleum Nairn Co.	34½	33⅞	33⅞
Container Corp. of America	38⅜	37	37¼
Container Corp. of America, pf.	....	....	....
Crown Zellerbach Co.	34⅝	32¼	32¼
Crown Zellerbach Co., pf. 4.20	100½	99⅞	100½
Crown Zellerbach Co., 4 pf. 4	129	122	122
Dixie Cup Co.	41	40	40¾
Dixie Cup Co., A	52¾	51¾	52¾
Flintkote Co.	41¾	39⅝	40¾
Flintkote Co., pf.	102½	102½	102½
Robert Gair	9⅞	9½	9½
Robert Gair, pf.	19	18½	18½
International Paper Co.	64⅜	61¾	62
International Paper Co., pf.	98¼	98	98¼
Johns-Manville Corp.	41⅝	40⅜	40⅝
Johns-Manville Corp., pf.	113	112	113
Kimberly-Clark Corp.	23⅜	22½	22½
Kimberly-Clark Corp., pf.	101¾	101	101¾
Mac Andrews & Forbes	39¼	39¼	39¼
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	24½	23½	24
Mead Corp.	22⅞	22	22⅛
Mead Corp., pf. 4¼	95½	95	95
Mead Corp., pf. 2	46	45	45
National Container Corp.	12¾	12¼	12¼
Paraffine Companies, Inc.	26¾	26¾	26¾
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	33½	32⅛	33¼
Rayonier, Inc., pf.	35	34½	34¾
Ruberoid Co.	71½	70	70
St. Regis Paper Co.	13⅜	13	13
St. Regis Paper Co., pf.	88¾	88¾	88¾
Scott Paper Co.	51	50	50
Scott Paper Co., pf.	94¾	94¾	94¾
Sutherland Paper Co.	43	43	43
Union Bag & Paper Corp.	39⅞	36	36
United Board & Carton	14⅝	14½	14½
U. S. Gypsum Co.	112⅞	112	112¾
U. S. Gypsum Co., pf.	179	178	178
United Wallpaper	5¼	5	5⅛
United Wallpaper, pf.	....	....	....
West Virginia Pulp & Paper Co.	50	49½	49½
West Virginia Pulp & Paper Co., pf.	110	110	110

BONDS

Celotex Corp., 3¼s '60	....	....	....
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	....	....	....

New York Curb Exchange

High Low and Last for Week Ending June 5, 1948

STOCKS

	High	Low	Last
American Writing Paper Corp.	7	7	7
Great Northern Paper Co.	42	41½	41½
Taggart Corp.	....	....	....

community civic and business leaders who will make the initial tour of the mill. The tour will be followed by a reception tendered by mill executives.

Days for the public of Springhill and vicinity to tour the mill will be June 15 and 16. On June 17 and 18, the mill will be open to employes and their families. Concluding feature of these two days will be the presentation of special medallions to 25-year employes.

At Georgetown, S. C., site of the largest paper mill of its kind in the world, Mayor Sylvan Rosen will preside with mill executives and other civic and business leaders at opening ceremonies of the program on June 14, when the initial tour of the mill will be made.

The public will tour the mill on June 15 and 16, and the final two days, June 17 and 18—will be given over to employes and their families, who will tour the mill and wind up the program with a get-together at Georgetown High School, when, mill executives will present special medallions to 25-year employes.

According to Mr. Hinman's announcement, details of the open house programs of the six northern mills are as follows:

Open House celebrations in the northern U.S. mills will be highlighted by employes' Field Days. As a rule, plans include mill tours for employes' families, picnics and a program of outdoor sports for adults and children.

At the Otis Mill, in Livermore Falls, Me., the Field Day party will be held June 20, concluding the week's open house activities. A picnic will also be served to employes and their families as the climax of the celebration. The week before, June 13, veteran employes will receive bronze 25-year medallions at a dinner in Murray Hall. On June 15, the open house celebration will be formally opened with a management luncheon for officials and other visitors in the Riverside Hotel. The public will be invited to attend the open house party on June 16-17.

In Corinth, N. Y., at the Hudson River Mill, the picnic and Field Day are scheduled for June 13, at the Corinth Airport. On June 14, management and local officials will open the open house celebration and will have a reception at 4:30 p.m. The medallion recipients will be honored at a dinner in the New Worden Hotel in Saratoga Springs at 7:00 p.m. on June 19. The public will be invited to attend the open house from Tuesday through Friday.

At the Niagara Mill in Niagara Falls, N.Y., the celebration will get under way June 14, with a mill tour for management and officials at 3:00 p.m., to be followed by a dinner in Lewiston, N. Y. On June 16, the medallion recipients will be feted at the Niagara Hotel in a joint dinner with the veteran employes of the Tonawanda Mill in North Tonawanda, N. Y. Employes and their families will attend the open house June 14-16, and will have buffet luncheons in the plant cafeteria. The general public will be invited on June 17 and 18.

At the Ticonderoga, N. Y., Mill, the dinner for the medallion recipients will be held June 16, but the open house will not open officially until a luncheon for officials on June 17. The general public will come to the open house June 17-19, while employes will wind up the celebration with a picnic and Field Day on June 20.

The party at the Tonawanda Mill will start with the joint celebration on June 14 with the Niagara Mill. On June 16, the medallion recipients will be jointly honored with those from the Niagara Mill at the dinner in the Niagara Hotel. The general public will come to the open house June 15-18, while June 20 is given over to visits by employes and their families, culminating in a buffet dinner.

At the York Haven, Pa., Mill, the open house celebrations will begin with a luncheon for management and officials on June 14, to be followed that night by a dinner for the medallion recipients. June 15 and 16 will be devoted to visits by employes and their families, with buffet luncheons and dinners being served. On June 17, groups and organizations in the York Haven area will be invited to attend the open house, and on June 18 the general public will be admitted.

The 11 converting plants of the company in the North, Mid-West and Far West, will hold special parties celebrating the anniversary. While these will not be full-scale open house programs, they will consist of luncheons, dinners and employe get-togethers, as well as receptions for customers, local officials and others.

A feature of all the community open house programs will be an exhibit showing the products and end-products made by the International Paper family and its customers. This exhibit, 53 feet long and 18 feet high at its topmost peak, is separated into three sections, showing the products made by the southern mills and plants, northern mills, and the mills and plants of Canadian International Paper Co.

In addition to the mills and plants of the South and North which will feature this exhibit as part of their open house programs, five converting plants not holding full open house programs will also feature the exhibit, and each of the open house parties of Canadian International Paper Co. will show the exhibit.

While the company's birthday party is being celebrated on a nationwide basis, the arrangements for the particular celebration at each mill have been developed locally by committees made up of men and women from each mill. Details thus vary widely not only from section to section but also from mill to mill. Features of the celebrations include:

Professional baby-sitters to take care of children too young to tour the mills with their parents at each of the southern mill celebrations; special barbecue-picnics for employes and their families at each of the southern parties; local exhibits showing particular mill products, and photo displays, at various celebrations throughout the North and South; special souvenirs for guests at various celebrations; field days and special programs for children at various celebrations; refreshments, and tour guide pamphlets reciting various local mill histories.

Main feature of the open house programs to be held by Canadian International Paper Co. will be donation by each mill to the community of permanent recreational facilities for employes, and for children of the communities.

Where Are We Going?

By Harry S. Straus

President, Ecusta Paper Corp., Pisgah Forest, N. C.

In the years following World War I, it was a frequent occurrence to find a British mission in this country sent by the English government to discuss with us the problem of settling their war debt. It is perhaps a sign of these times that none of the debtor nations even bother any longer to send missions over here.

This is fortunate in one respect, because it saves us the time and embarrassment of listening to explanations about why they can't repay what they borrowed. One of these missions arrived here around 1922, headed by a gentleman whom we shall call Lord Trelawney.

After being entertained officially in Washington, and interviewed and photographed by the press, he left the Capital one Sunday morning by train. When the conductor asked for his ticket, Lord Trelawney was shocked to discover he could not find it. As he was rummaging rather desperately through his pockets, the conductor said to him: "You are Lord Trelawney, aren't you?" He replied, "Yes, I am, but would you mind telling me how you happen to know me?" "Oh, that is easy," said the conductor. "I saw your picture in the paper this morning." "That's very nice," said Trelawney, "but I must tell you that I am afraid I can't find my ticket." "Well," said the conductor, "seeing that you are Lord Trelawney, I guess that will be O.K. with us." "You are really most kind," said Trelawney, "and as you Americans say it may be O.K. with you but it is not O.K. with me. I don't know where the hell I am going."

But for the fact that I consider myself a papermill superintendent, and therefore one of you — even though I have never been initiated into your Secret Order — I am afraid I feel tonight very much as Lord Trelawney did 25 years ago.

It seems to me that you and most other production executives are beginning to get a very clear idea of *where we are going*, and of the importance of the relationship between production and the future of our nation.

Industrial *productivity* is a vital key to America's greatest problem.

I suppose I am considered old fashioned, but I still believe that you can't *legislate* an effective economic system. It can only be created by men, with legislation acting as a balance wheel. The act of economic creation is a *voluntary* one. The moment government shifts its role from one of regulation to one of control, it is no longer possible for men to act voluntarily. In other words, when you are *regimented*, you can't at the same time be *free*. And the moment this happens, the urge to *create* withers and ultimately dies.

Because I believe freedom is the key to progress, I believe equally that you can't have freedom without private property, without free markets, without the profit motive (both for the company's president and the janitor alike) and without competition in a free market. All these things are possible only where government regulates, but all are impossible where government controls.

Maybe the tragic collapse of the British economic system, brought on by fallacious attempts to socialize her industries, fostered by her Labor Party leaders, will open American eyes heretofore closed.

What I shall say to you about productivity is based on the assumption that most of you share my belief in the free enterprise way of life.

While this way of life has brought great economic progress to our country, we would be blind if we failed to recognize that we have made mistakes, and serious ones, along the way. It is no less true of a nation than of a business, that its future depends upon recognizing and correcting past errors, both of the mind and of the heart.

One of our great failures as a young industrial nation was in our immature concept of the relationship between management and employes. We allowed the false notion to grow in the minds of millions of men and women that business was composed of *capital and labor*. We did little to prevent the people of this country from following Karl Marx's *lie* about class warfare in industry. And then, to make matters worse, some of us even acted as if this lie were true. Thus a great and wrong division between management and men was allowed to flourish and to grow.

As this lie grew, we tried to restrain its growth, sometimes even by force and by abuse. But this only served to widen the artificial breach between employes and management, because the latter had given color to the lie by treating employes as enemies, not as partners. Often management concerned itself with their reprisals against it, and too frequently overlooked the causes of employe dissatisfaction and unhappiness.

Thus it was that management and men lost their sense of inter-dependence, and thus it was that the Wagner Act came into being as a punitive measure against American management.

During the next decade, the breach widened; and many employes, forgetting their fundamental unity with management, were guilty of great excesses not only toward management, but toward fellow employes, and toward the public as well. Once again national dissatisfaction grew over an unbalanced and destructive industrial relations picture. As a result of public resentment against labor organization bosses and policies, the Taft-Hartley Act was enacted, which was designed to correct the abuses and inequities, for which so many American employes had now become responsible.

I sincerely believe the Act will help to remedy many of these problems; but I am sure that Representative Hartley, who spoke to you so ably this morning, would be the first to agree that neither his law, nor any other, can legislate a *point of view*. And while our economy has suffered greatly from labor abuses in the past 15 years — which I admit were not always unjustified — I am sure he would also agree that even these abuses are not as dangerous to our nation as the false point of view that has done so much to divide American management and American employes in hostile, distrustful, and often warring groups.

Only a few days ago I heard a labor consultant say that the Taft-Hartley Law is the beginning of the freedom of the working man from labor bosses. He added that through the law, management would have an opportunity to talk to labor thereby bringing about better human relations.

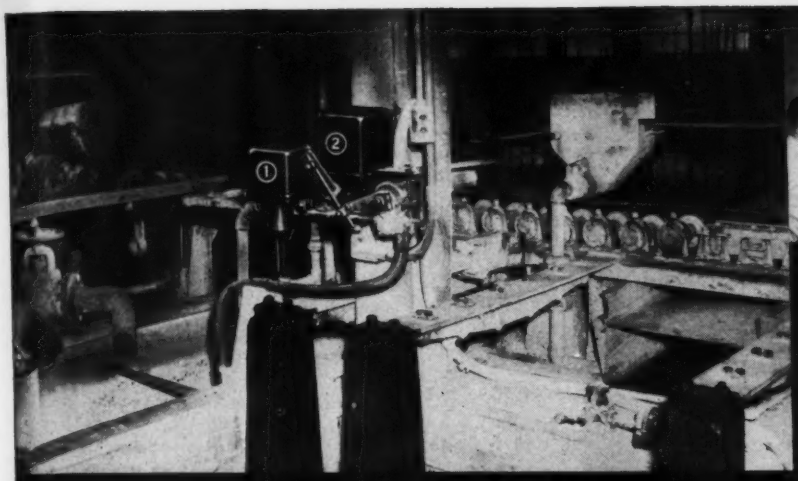
Sickness, accidents, old age, death and unemployment are the five horsemen threatening the wage earner's *security*, well-being, and peace of mind. No employe can feel united to an employer who is indifferent to his problems when sickness or accidents occur. No employe can truly believe in industrial cooperation, and pass that conviction along to his children when he knows that old age will find him on the industrial scrap heap. Nor can the family bread-winner think very highly of an economic system and its management, if they congratulate him on his hourly rate of pay, but overlook the important fact that his annual income is the thing that really counts.

Gentlemen, these primary responsibilities belong to us; and when we have made an honorable, skillful, and successful effort to discharge them, I believe we will begin to have unity between management and men, not because it sounds right, but because it works well as a practical manner in the lives of people.

We will then be in position to secure more wide-spread acceptance of another point of view which is close to the hearts of us all. You and I know that the way to depression is more pay for less work. We know that this attitude today is an important cause of the inflation we are experiencing. America cannot lick inflation by a formula of "More Pay for Less Work." We know that higher productivity is the only real answer to it, and the real key to prosperity.

(Continued on page 16)

Excerpted from an address at the New Orleans Convention of the American Pulp & Paper Mill Superintendents Ass'n., May 21, 1948.



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Latin-American Forest Resources

UNITED NATIONS HEADQUARTERS—The virgin forests of the Latin American continent are one of the world's few remaining reservoirs of wood. Covering over two billion acres, this enormous timber wealth is made up of a great variety of species—there are over 2,700 kinds of palm alone—but in some instances nearly pure stands of commercial timber exist. Examples are the crabwood in Venezuela and the Guianas, mora and possum in Surinam, and quebracho in the Argentine.

Despite this untold wealth, Latin America today imports twice as much wood as it exports. In the next decade this situation is expected to be reversed as a result of the common forestry development program presented to 21 countries that met at the recent Latin American Forestry Conference at Teresopolis, Brazil. The first specialized forestry conference to be held in the history of Latin America, it was called by the Food and Agriculture Organization in April 1948.

The development program proposed at Teresopolis is designed to strengthen the economies of all Latin American countries and at the same time, make available increased supplies of timber for the reconstruction of Europe.

Major work of FAO was seen as providing a continuous flow of counsel and technical advice, which should be channeled through a central office in Latin America. This office, to be known as the Regional Working Group, would consist of forestry technicians with previous Latin American experience. It was recommended that a Latin American Forestry and Forest Products Commission, consisting of representatives of all interested Latin American governments be established to promote suitable broad regional policies.

Another role of FAO was seen as that of encouraging capital investments, both private and public. Success of the plan was based on the ability of Latin American nations to obtain machinery and equipment, delegates said.

Among important recommendations of the Conference were completion of forest inventories, organization of Latin American forest services, training of 1,000 professional foresters and 2,000 sub-professional trained foresters to staff these services, and continuous development of rational exploitation of the forests of all countries. These figures were based on estimates received by FAO from ten of the 20 Latin American governments. How many of these foresters are already at work in Latin America now? Replies from 12 countries indicate 300 professional and 450 sub-professional foresters, many of whom would like more intensive training.

Brazil acted as host government to the Conference, which was attended by delegates from Brazil, Chile, Costa Rica, Cuba, Dominican Republic, France (for French Guiana), Guatemala, Honduras, Mexico, Netherlands (for Surinam), Nicaragua, Paraguay, Peru, United Kingdom (for British Guiana), United States of America (for Puerto Rico), Uruguay and Venezuela. Observers from Argentina, Canada, Italy, and Portugal were also present. International agencies represented were: the United Nations, UNESCO, ILO, Pan-American Union, and Inter-American Agricultural Institute.

Where Are We Going?

(Continued from page 14)

And so, what has happened as a result of this second false viewpoint? You can translate the result into terms any employe can quickly understand.

As many of you know, most of our cigarette paper in this country was formerly imported from Europe, where I had extensive interests. For this reason, a few months ago, I went abroad to see for myself the extent and nature of European recovery. Wherever I went, I saw demoralization of industry, and hopelessness among people. I saw Communism at work, and learned to know it as it is—an iron-clad dictatorship with a complete contempt for the rights of the human being. I saw it as a grasping, greedy conspiracy, bent on dominating the world by imposing a dictatorship scarcely distinguishable from the Nazi plan for world supremacy.

I visited England and saw Socialism and its failure to provide English people with either enough food and goods to consume at home nor to export abroad.

And as I traveled, I realized the immense burden the United States has assumed in making our country economically responsible for recovery abroad. This burden of 17 to 20 billion dollars for the Marshall Plan would be staggering enough if imposed on a stable economy, but no one can foretell its consequence when imposed on a nation like our own, already deeply involved in a serious inflation period.

In closing I want to make an earnest appeal to you fellow superintendents: Through you and your assistants, your foremen and your assistant foremen, we must untiringly endeavor to carry this message within our gates. Then ask yourselves, *where are we going?* The answer is, in the direction of unity and productivity, towards happiness, prosperity and security. In this endeavor, as Tiny Tim said in the Christmas Carol: "God bless us, one and all."

Wehrenbrecht Succeeding Brown at Bemis' N. O. Plant

NEW ORLEANS—Reuben H. Brown, manager of the local plant of Bemis Bro. Bag Co., has announced his forthcoming retirement effective July 1. He will continue with the company for several years more as special representative,. He will be succeeded by H. J. Wehrenbrecht, who has been assistant manager since 1943.

Mr. Brown joined Bemis in 1900 as a sales representative and became manager of the New Orleans plant in 1931. He was instrumental in the development of the Bemis export department, building company representation and contacts in Latin America. He has been active in civic affairs.

Mr. Wehrenbrecht started with Bemis at St. Louis in 1918. He later transferred to the Bemis Houston plant as a salesman and was made sales manager there in 1928, which position he held until his transfer to New Orleans as assistant manager.

St. Regis Transferring McDermott to Tacoma

OSWEGO, N. Y.—John A. McDermott, superintendent of the paper division of the Oswego plant of the St. Regis Paper Co., Inc., will leave about July 1 for Tacoma, Wash., Wm. Adams, director of paper production, with headquarters in Watertown, disclosed on May 29.

At Tacoma, Mr. McDermott will supervise final details in connection with construction of St. Regis' new paper mill there and become superintendent of the plant when it goes into production late in the year.

Mr. Adams said that Mr. McDermott's successor in the Oswego mill will be Edward Murphy, now assistant superintendent.

Scott Paper Co. Advances Duff, Prescott, Witt

CHESTER, Pa.—Scott Paper Co. has named G. A. Duff manager of its newly created public relations department; Theodore W. Prescott, assistant advertising manager in charge of retail advertising and promotion, and Fred W. Witt as assistant advertising manager in charge of industrial advertising.

Mr. Duff, who has been assistant advertising manager of the firm since 1941, joined Scott 21 years ago.

Kelly-Forsyth Corp. Buys Port Leyden Mill

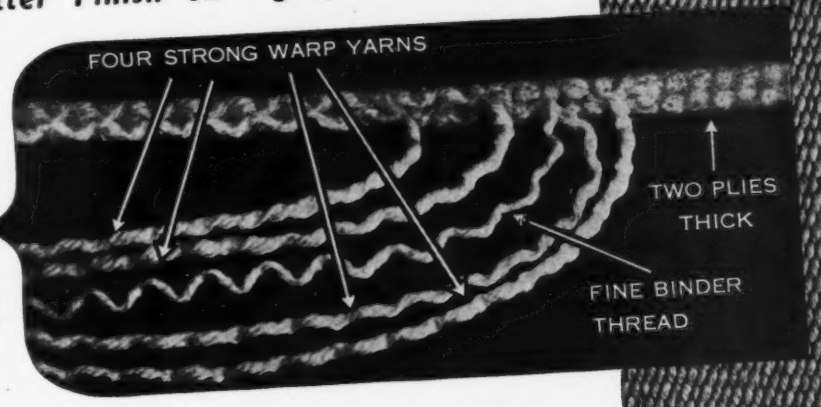
LYONS FALLS, N. Y.—The Kelly-Forsyth Corp., of which John M. Kelly of Ithica, N. Y., is president, on June 2 purchased the Port Leyden mill of the Continental Can Co's., Gould Paper Co., division. The mill, which has been idle for six years, will be used by Kelly-Forsyth to manufacture specialties.

BRANDON
"Multiple Weave"
Cotton Dryer Felt

A Smoother Surface:

for Better Finish on high-grade papers

Here is the weave



NOTE Closely these IMPORTANT FEATURES:

1. Surface threads go "over and under" only *one* filler—giving SMOOTH, FLAT surface. No sharp "knuckles" to mark your sheet. Better finish.
2. Same four (4) sets of strong WARP threads used in the 3-ply weave. Plenty rugged for fast running machines.
3. High porosity for fast drying. Medium weight—52-oz. square yard.
4. Actually two separate fabrics woven together—if one surface wears through, the other complete fabric holds the felt intact.

* Prestretched and equipped with Clipper Seam if desired. Available now from 80″ to 170″ wide. Same price as regular cotton felts.

Morey Paper Mill Supply Co.

309 SOUTH STREET, FITCHBURG, MASSACHUSETTS

Sole Distributors of Dryer Felts Manufactured by

BRANDON CORPORATION . Greenville, S. C.

St. Lawrence Directors Submit New Reorganization Plan

PASSAIC, N. J.—Plans for reorganization of the St. Lawrence Corp., and St. Lawrence Paper Mills Co., were approved by their directorates for submission to stockholders, State Senator David Van Alstyne, of Englewood, corporation chairman, disclosed on May 28.

Both plans involve exchange of outstanding A stock or preferred stock for shares of new preferred stock.

It was the rejection of original reorganization plans for the St. Lawrence firms by a Montreal court last January which led to Senator Van Alstyne's self-elimination as a Republican candidate for U. S. Senator from New Jersey. State Treasurer Robert C. Hendrickson was selected to succeed him as candidate.

For the St. Lawrence Corp., each share of outstanding A stock would be exchanged for one share of new first preferred stock (with annual dividend rate of $2), one share of new second preferred stock (annual dividend rate 75 cents, and redeemable at $20) and $2 in cash. The new second preferred shares would be redeemed at least $500,000 worth a year out of earnings.

For St. Lawrence Paper Mills Co., each share of outstanding preferred stock would be exchanged for one share of new first preferred stock (annual dividend rate, $6), one share of new second preferred (dividend rate $2.40, redeemable at $60), and $7.75 in cash.

In January, a Supreme Court justice in Montreal set aside a reorganization plan which had been approved by a majority of stockholders. He held that shareholders "were given incorrect, misleading and insufficient information" on which to base their voting. The arrangement, he said, would have been "in the sole interest of the common stockholders."

A leading objector to the proposal was Joseph Mayr, New York lawyer. Mayr, chairman of the Class A stockholders' protective committee, was included in the group which drafted the new reorganization plans.

Senator Van Alstyne, majority leader in the New Jersey Legislature, gained control of the St. Lawrence Corp. and its subsidiaries in February, 1947.

Mead's Whitaker ECO Acting Chief, Pulp and Paper

WASHINGTON — Appointment of Howard E. Whitaker of Chillicothe, Ohio, as acting chief of the pulp and paper branch of the Economic Cooperation Administration was announced immediately after Decoration Day. Mr. Whitaker is vice-president in charge of operations of the Mead Corp.

During the war, Mr. Whitaker was first deputy administrator of the pulp and paper division of the WPB and later head of the combined pulp and paper committee of the Combined Production & Resources Board. For six months also, he served in London as a member of the Mission for Economic Affairs.

Mr. Whitaker is 44, and a graduate of Massachusetts Institute of Technology.

Streamlining Waxtex Production

MENOMINEE, Mich. — Production of household waxed paper roll and other waxed papers will be facilitated through a modernization and enlargement program at the local plant of Marathon Corp., according to Leo E. Crot, Menasha, Wis., executive vice-president of the firm.

Addition of new equipment puts Waxtex manufacturing, from pulp to finished product, under a single roof. Consolidation of this operation, plus relocation of various units for smoother production flow, will step up the entire manufacturing efficiency of the Waxtex production division, Mr. Crot said.

K-C Planes Execs to Plants

NEENAH, Wis. — A five-passenger, twin-engine Beechcraft D-18-S airplane delivered to the Kimberly-Clark Corp., has a range of 910 miles and a cruising speed of 200 miles per hour.

Kimberly-Clark will use the plane to transport executives and other employes between its mills and offices in the U. S. and Canada.

Use of the plane will bring savings in travel expense as well as time, it was stated. There will be no regularly scheduled flights as trips will be planned from week to week, according to William Wright, director of service operations, under whose department the plane will be operated.

J. D. Zellerbach to Italy In ECA Post

WASHINGTON — J. D. Zellerbach, president of the Crown-Zellerbach Corp., San Francisco, has been named chief of the Economic Cooperation Administration's special mission to Italy by Paul G. Hoffman, ECA administrator.

Farver Coosa Comptroller

BIRMINGHAM, Ala.—Appointment of Franklin D. Farver, Appleton, Wis., as comptroller of the Coosa River Newsprint Co., Childersburg, Ala., was disclosed on June 9 by A. G. Wakeman, vice-president and general manager of the concern. Mr. Farver has been chief accountant of the Kimberly-Clark Corp., Neenah, Wis.

Simultaneously, announcement was made of the transfer to the Coosa River Co., of Rupert I. Clowes, as cost accountant, from the position of mill office superintendent at the Long-Lac Pulp & Paper Co. at Terrace Bay, Ont. The transfers are effective immediately.

Instructors Honored

MENASHA, Wis.—Speaker at a joint dinner meeting of the Badger-Globe Foremen's Club and the Lakeview Supervisor's Club of the Kimberly-Clark Corp., on June 5 was Dr. Thomas B. Lyter, pastor of the Washington Park Presbyterian Church of Milwaukee.

The dinner meeting honored instructors who conducted the training during the 1947-48 season. Executives of the Kimberly-Clark Corp., and instructors and their wives were guests. William Herriott of the Badger-Globe club and Art Homblette of the Lakeview club were in charge of the party.

Paul Succeeds Koehler At U. S. Forest Products Lab.

MADISON, Wis. — Arthur Koehler, scientist and authority on wood structure and identification at the U. S. Forest Products Laboratory here, will retire June 30. A member of the staff since 1914, Mr. Koehler has been chief of the Laboratory's Division of Silvicultural Relations for 25 years.

Succeeding him as division chief will be Benson H. Paul, silviculturist on the Laboratory staff since 1922.

International Container Plant For Wooster, Ohio

WOOSTER, Ohio — International Paper Co. has acquired a site in this city for a new corrugated kraft board shipping container plant. The firm now has container plants in Chicago, Los Angeles, Georgetown, S. C., Springhill, La., Kansas City, Kans., Somerville, Mass., Whippany, N. J., and St. Louis.

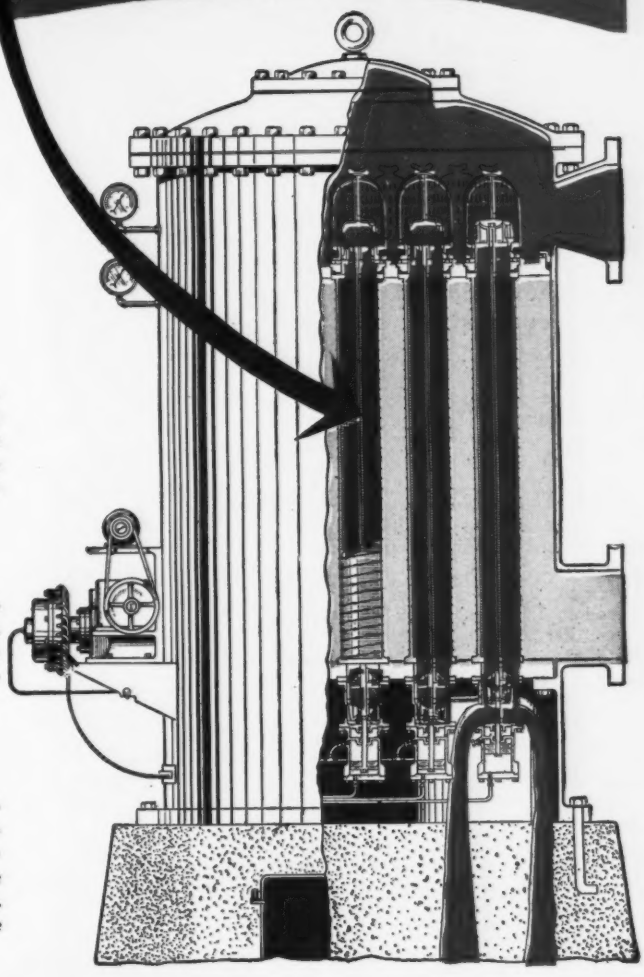
F. J. Kress Box Co. Building Newark, O. Plant

NEWARK, Ohio—The F. J. Kress Box Co., of Pittsburgh, Pa., is starting construction of a million-dollar plant here which is to have 50,000 square feet of floor area, all on one floor, and to be ready for operation early in 1949.

Dandrow Heads M. I. T. Alumni

CAMBRIDGE, Mass.—C. G. Dandrow, vice-president of the Johns-Manville Sales Corp., and general sales manager of the company's industrial products division, has been elected President of the Massachusetts Institute of Technology Alumni Association.

ADAMS AUTOMATIC WATER FILTERS



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BY THE PAPER INDUSTRY

✔ *for* PRIMARY FILTRATION

PORO-SCREEN Filters are a practical method for filtering water direct from the river or other source. Removes sand and grit 15 times finer than 1/32". Delivers a large volume of filtered water suitable for general mill service in the processing of newsprint, box board and other coarse grades of paper stock.

✔ *for* SECONDARY FILTRATION

PORO-STONE Filters provide effective filtration for water required in high grade paper stock. Installed following sand filter equipment, the PORO-STONE Filter eliminates finest sand, pipe scale and all foreign matter which might impair paper quality.

●

ADAMS Filters (both PORO-SCREEN and PORO-STONE) are designed for continuous, automatic operation. No moving clearances to pass foreign material—no shut-downs required by back-wash cleaning—very little attention needed. *Constant filtration assured at all times.* Built in several sizes to meet your requirements. Write for Bulletin 901.

★ R. P. ADAMS COMPANY, INC. ★

231 EAST PARK DRIVE, BUFFALO 17, N. Y.

ADAMS PORO-STONE AND PORO SCREEN FILTERS

Delaware Valley Section TAPPI Elects Dr. John Weidner, Ch'm

PHILADELPHIA—The Delaware Valley Section of the Technical Ass'n., of the Pulp & Paper Industry held its annual meeting and election of officers for the coming season on May 27 at the Engineers Club. The Section voted to dispense with a June dineer-dance after considering the report of the committee appointed to investigate possible arrangements. The group also voted to continue with the present meeting arrangements until a better date can be obtained for the present meeting room.

Dr. H. C. Brill, chairman of the Tellers Committee announced the unanimous election of the following officers for the 1948-49 season: Chairman—Dr. John Weidner, Container Corp. of America; first vice-chairman, Dr. A. S. Erspamer, P. H. Gladfelter Paper Co.; second vice-chairman, W. P. Dohne of W. C. Hamilton & Sons; secretary-treasurer, Miss Lois V. Hans, Hercules Powder Co.

Executive Committee—John Macadam, National Vulcanized Fibre Co., and Kingdon R. Watt, Curtis Paper Co. with John Davis, Mead Corp. continuing as National TAPPI representative.

Mr. Macadam, the retiring chairman, turned the meeting over officially to the new chairman, Dr. Weidner, who introduced A. J. Pingarron, production manager of the Philadelphia Branch of International Printing Ink Corp. Mr. Pingarron, presented his discussion of the graphic arts in an informal manner and encouraged the audience to bring up questions or open discussion.

Brunner Mond Soda Ash Production Boost

WASHINGTON—Completion of a $3,000,000 expansion program this fall will increase the soda ash production of the Brunner Mond plant at Amherstburg, Canada, by ten percent, according to the Department of Commerce.

Country allocations for all soda ash, both manufactured and natural, have been revised as follows, in thousands of pounds:

Mexico, 9,000; Guatemala, 350; El Salvador, 150; Honduras, 100; Nicaragua, 300; Costa Rica, 100; Panama, 150; Cuba, 3,000; Haiti, 100; Dominican Republic, 200; British West Indies, fifty; Curacao (NWI), fifty; Colombia, 2,300; Venezuela, 1,100; British Guiana, fifty; Surinam, fifty; Ecuador, 300; Peru, 3,000; Bolivia, 200; Chile, 1,400; Brazil, 17,000; Paraguay, 150; Uruguay, 3,000; Argentina, 14,600; Denmark, 3,000; Eire, 750; Netherlands, 3,000; Portugal, 100; Sweden, 250; Greece, 100; Turkey, 2,000; Iran, 100; India, 9,000; Pakistan, 600; Thailand, 200; British Malaya, 1,250; Netherlands Indies, 500; Philippines, 1,200; China, 2,000; Hong Kong, 800; Australia, 9,700; New Zealand, 100; Union of South Africa, 400; special projects, 7,750; and undistributed reserve, 500.

Reasonable quantities of "natural" soda ash will be approved for export without restriction under a modification of controls of this commodity announced this week.

Exports will nominally continue to require a validated license, it was explained, subject to the above modification. The change was taken in view of the surplus capacity on the West Coast for manufacture of the "natural" type soda ash, although there is an over-all short supply situation in soda ash.

The change in effect established separate export procedures for natural and "manufactured" soda ash. Beginning June 1, it was pointed out, exporters should indicate clearly in their applications for license which category of product the application covers.

Clark Associates Continuing Founder's Cost Engineering Service

NEW YORK—Frederic C. Clark Associates, consulting engineers, have added a plant cost control department under the direction of Miss Margaret Montgomery, a former asociate of the late George A. Ware, who developed the cost engineering service for the American Paper & Pulp Ass'n., to continue Mr. Clark's project.

Harris-Seybold N. Y. Quarters At 380 Second Avenue

NEW YORK — Eastern district headquarters and service offices of the Harris-Seybold Co., were moved on June 1 to 380 Second Avenue, J. W. Valiant, vice-president and eastern district manager, reports. Previously the firm was at 75 Varick Street.

Wright-Hibbard Names Frank H. Connolly GSM

NEW YORK—Frank H. Connolly, formerly with the Mobilift Division of the Vaughan Motor Co., manufacturer of industrial trucks, was appointed general sales manager of the Wright-Hibbard Industrial Electric Truck Co. Inc., on June 1.

Wm. S. Bradford is Named Twitchell Plant Manager

PHILADELPHIA — William S. Bradford, has been named general plant manager of E. W. Twitchell, Inc., manufacturer of paper products for industrial uses succeeding E. R. Clatterton, resigned, E. W. Twitchell, president, reports.

Mr. Bradford became general foreman of the company in 1941, and has been with that organization since, except for a three-year period during the war, when he was chief of the technical division of the United States Conciliation Service in Washington. He returned to the Twitchell company in September, 1945.

Monsanto's Trenton, Mich. Plant Now in Operation

ST. LOUIS, MO.—Monsanto Chemical Co. on June 1 began operating its new plant at Trenton, Mich., to manufacture Sterox AW and Detergent MXP, new non-ionic controlled suds detergents. Detergent MXP is finding wide use for industrial cleaning and for mixing with other detergents to prevent dusting and improve performance, R. S. Weatherly, Monsanto phosphate division sales manager, said.

Dry Casein Output Down

WASHINGTON—Dry casein production dropped in April to 1,425,000 pounds, 51 percent below April 1946, and fourth lowest output of record in 27 years, the Agriculture Department stated on June 5.

Manufacturers' dry casein stocks on April 30 were estimated at 2,325,000 pounds, lowest for that date in seven years.

D. Stein Joins Rumford

RUMFORD, R. I.—Dr. Norman Oscar Stein has been named chief technical assistant to the president of the Rumford Chemical Works. Dr. Stein was formerly general superintendent of the carbon dioxide plants of the Air Reduction Sales Co., New York, and wartime manager of the Chemical Section, War Assets Corp. of Canada.

Lois River Dam Raised

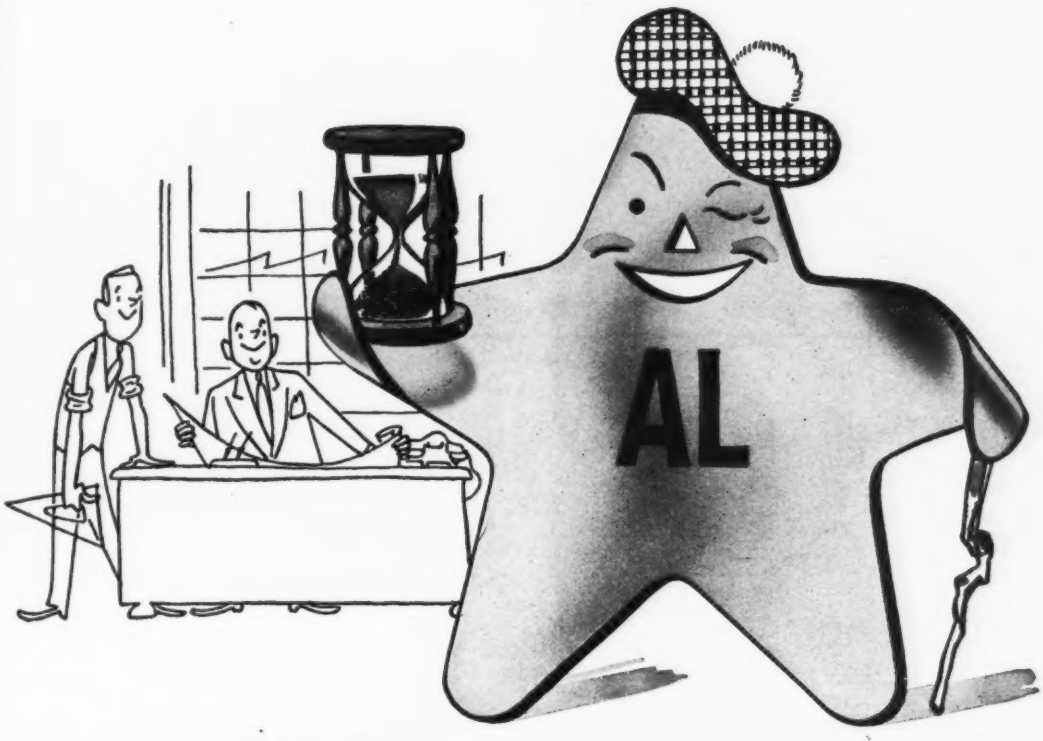
VANCOUVER, B. C.—Raising of the Lois River Dam of the Powell River Co. and installation of a new 18,000 K.V.A. unit at the powerhouse has been completed, giving the company a hydro electric supply of approximately 95,000 h.p. at its plant at Powell River, B. C.

Dicalite Co. Headquarters In Los Angeles

LOS ANGELES—Main offices of the Dicalite Co., a division of the Great Lakes Carbon Corp., producing diatomaceous filter aids, fillers, insulation, etc., are now located in this city.

Diamond Match Names Dickinson to Sales Post

CHICAGO—James B. Dickinson has been named sales manager of wood, paper and pulp products of the Diamond Match Co.



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lasting beauty and low maintenance
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Design for permanence with Allegheny Metal,
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26,000 Acres of Seedlings Planted in the South

CHARLESTON, S. C.—H. J. Malsberger, general manager of the Southern Pulpwood Conservation Ass'n., reports that the pulpwood industry in the South last year replanted 26,000 acres of poorly stocked forest and abandoned farm land. Twenty-six million pine seedlings were planted by the industry.

"Of the seedlings planted," Mr. Malsberger said, "20,000,000 were purchased from State forest nurseries with the remaining 6,000,000 being obtained from nurseries operated by pulpwood companies. Nineteen million of the total were planted on lands owned by the industry while the remainder were distributed free of charge to small woodland owners for planting. Average cost of the planting was $2.50 per thousand.

"Practically all the seedlings planted last year will be ready for first thinning in 15 to 20 years. Last year the industry cut 8,000,000 cords of pulpwood in the South. About ten average-size trees are required to make a standard cord of pulpwood. This would mean that some 80,000,000 trees were cut in 1948 for pulpwood. Members of the association, who represent 90 percent of the total pulpwood produced in the South, were responsible for the replanting of 26,000,000 of these trees," Mr. Malsberger continued.

"Other work done by the association is the encouragement of full fire protection and improved cutting practices on the 160,000,000 acres of privately owned and naturally stocked forests in the area," Mr Malsberger said.

Which of these jobs can TAMOL do better for you?

PITCH CONTROL. Through the years, Rohm & Haas TAMOL P has demonstrated its value for positive pitch control on sulfite and groundwood pulps . . . Original cost is low (2 to 3 pounds per ton of pulp being sufficient generally)—and costly shutdowns for cleanups are minimized. TAMOL P is non-abrasive and non-corrosive. It is supplied in convenient dry form.

PIGMENT DISPERSION. Rohm & Haas TAMOL P is an efficient dispersing agent and deflocculant for calcium carbonate, titanium dioxide, clays, carbon black and other pigments. It is highly effective in alkaline systems. It is very useful in promoting fluidity in starch-bound coating colors.

GLUE PRECIPITATION. Rohm & Haas TAMOL P, used as a precipitant for animal glue in the beater, results in highly increased retention. It is added after the size, alum and glue solution—and is also used with the animal glue in the head-box or beater to aid in retention of fillers and fines.

If you have these manufacturing problems, write today for further information regarding TAMOL P—another of the Rohm & Haas group of time-tested paper chemicals.

Tamol is a trade-mark, Reg. U.S. Pat. Off

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Philadelphia 5, Penna.

St. Regis Citrobag Replaces Conventional Wooden Crate

NEW YORK—St. Regis Paper Co. is producing a new multiwall paper bag for shipment of citrus fruit. The bag eliminates the need for refrigeration in plants and transit, Kenneth D. Lozier, vice president of St. Regis Sales Corp., said.

Use of the multiwall "Citrobag" and a new automatic packer developed by St. Regis will mean a saving of approximately $175 per car of fruit, when compared with current packaging methods, Mr. Lozier asserted.

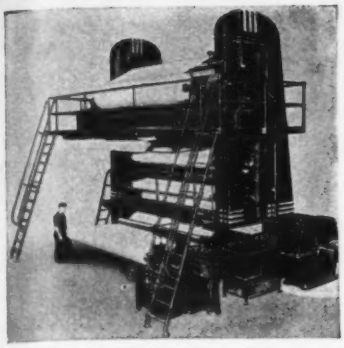
Four plies of kraft paper make up the bag. The inner wall is chemically treated to prevent deterioration and reduce shrinkage. Next is a layer of paper treated to hold in the chemical vapor. The two outside sheets are treated with a compound that resists the citrus juices which break down paper ordinarily used in bags.

Mr. Lozier said that, for customers, the Citrobag simplifies disposal of used containers, assures better appearing fruit, provides easier handling and keeps the fruit clean. He reported oranges packed in a Citrobag for two weeks lost 2.45 per cent by shrinkage, compared with 7.48 per cent for oranges packed in ordinary containers.

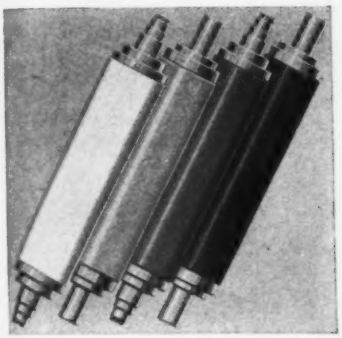
New Officers for Biggs

AKRON, Ohio—B. R. Barder, president, and associated with the Biggs Boiler Works Co., for 54 years, has disposed of his interest in the firm to capital represented by T. Hall Keyes, chairman of the board; K. McKinley Smith, president, and T. E. Krizanek, vice-president and general manager.

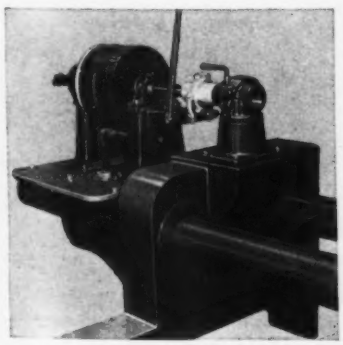
The new owners, with a long, successful record in industrial finance, will pursue Biggs' sound policies of workmanship and service, with such expansion in mind as conditions may warrant, a spokesman said. Mr. Krizanek contributes more than 26 years of experience in manufacturing and industrial operations to the new lineup.



SUPERCALENDERS • Furnished in all sizes from the three roll laboratory model up to full paper machine widths with all the late Appleton features for dependable operation with little down-time.



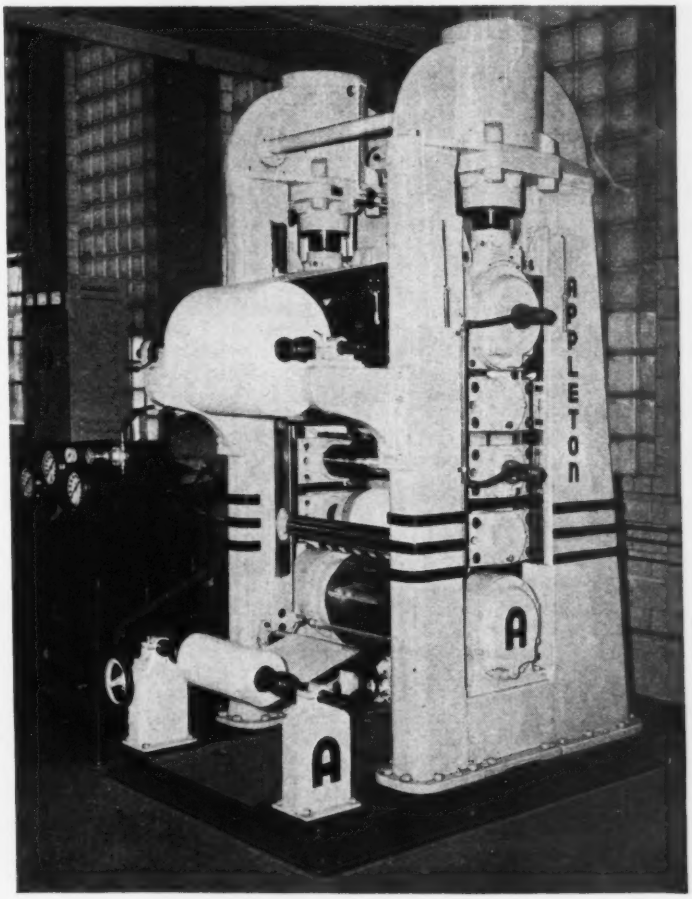
FINISHING ROLLS • The most complete selection in America—a standard or special roll type to give smoothness and finish as required on any grade of paper and at any speed—on any calender.



AUXILIARY EQUIPMENT • A full line of accessories for high speed finishing—hydraulic pressure and oiling systems, control panels, unwind and windup reels, winders, brakes, roll trucks, etc.

Fits an Important Place in the Mill Manufacturing High Finish Papers

Technicians in mills manufacturing high finish papers have their special problems in control, research and development of paper coating and finishing. The Appleton Experimental Supercalender is special equipment just for them. This small size super stack is built for close and accurate control of trial runs and duplicates mill operating conditions and results. It has all of the advanced features of Appleton mill Supercalenders for smooth, vibrationless operation and precision, finger-tip control —all of the latest mechanical and electrical advancements for fine performance and finishing at modern high speeds and high pressures.



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TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, June 9, 1948.

The new agreement between Swedish pulp producers and their government on pulp exports has now become effective, a leading Swedish journal informs. This is the agreement which levies a charge of 50 and 20 kronor on each ton of exported chemical or mechanical pulp for the Business Cycle Equalization Fund, thus penalizing Sweden's two largest pulp customers, the U. S. and Britain. It is also learned that Swedish producers, while in agreement with the provisions of the tax, are not in accord with the principle of a tax on exports.

Imposition of this tax drew sharp reaction from U. S. buyers on the grounds that it is inconsistent with the principles of the ERP under which we are being asked to lend money to Sweden, and presentation of these views were made through the American Embassy by the State Department. Reliable sources indicate that continued U. S. resistance to Swedish high prices may bring repeal of the $14 export tax.

Meanwhile negotiations for settlement of third and fourth quarter contract prices to Britain and the U. S. are under way. The market tendency is reported firm with present prices likely to be unchanged except on unbleached sulphate which has a marked softening. The entire estimated output of *mechanical* for this year will now have been put under contract. *Chemical* sales also are well advanced, particularly the unbleached grades.

Plans for the expansion of paper production in Bizonia are being hampered by shortage of wood pulp, according to Military Government officials. Paper and pulp production cannot advance above 50 percent of the 1936 level as a result. Other information is to the effect that plans are afoot for the Military Government to buy from Sweden for Germany some 25,000 to 30,000 tons of unbleached kraft which represent U. S. second quarter cancellations, also to increase 1948 purchases by 50 percent during 1948.

Appraisal of the various factors which may influence the available supply and price trends of purchased pulp during the coming months is made by the U. S. Dept. of Commerce in its May Industry Review:

"In the U. S., which produced approximately 43 percent of the market pulp received at the mills, there is no indication of any appreciable increase in the near term output of pulp for sale. A further expansion is expected in pulp-consuming activity.

"Canadian (and Newfoundland) market pulp, comprising nearly 30 percent of total mill receipts, is not expected to increase substantially in output during the next several months. The addition of approximately a dozen new pulp mills during the recent year and in the next two or three will probably not add any sizable quantity to the aggregate of Canadian pulp available for purchase by U. S. consumers. As these new mills—with the exception of one dissolving pulp operation—are in the kraft field, it is this grade whose supply available for purchase may be somewhat enlarged. The near-future outlook for Canadian market pulp exports to the U. S. appears to depend upon a balance being reached between the official Canadian policy of greater concentration on more fully manufactured products on the one hand and the immediate and importunate demand for U. S. dollar exchange on the other. One of the foremost officials of the Canadian industry anticipates an expansion of their pulp exports.

"Swedish 1947 prices of export pulp on the average were from 35 to 55 percent greater than in 1946, and prices for first and second quarters in 1948 were further advanced. Production costs, though double those of prewar, cannot be accepted realistically as the sole justification for the current high selling prices. Swedish pulp exporters are naturally taking full advantage of the world-wide demand for their product. Despite the adverse production factors above mentioned, trade reports indicate that the pulp industry in general finds itself in an advantageous market position, one in which it might be able to operate profitably at appreciably lower selling prices.

"In Finland, where 14 percent of our 1947 market pulp imports originated, the pulp producing industry is faced with a number of unfavorable factors. Foremost are the hazards of her political situation and the constant drain of war reparations on her economy. Inflation combined with the severe scarcity of nearly all goods is causing high prices, both domestic and export. An urgent need for machinery replacement — impossible to satisfy with limited international credit—presents a serious problem. . . . With assurances of generally adequate stocks of pulpwood, producers hope to extend gains in 1948 and to increase pulp shipments to the U. S., which in the first quarter of 1948 received 260 percent more Finnish pulp than in the comparable period of 1947. There is no indication of any near-term softening of Finnish export pulp prices.

Newsprint

Announcement by St. Croix that its base zone contract price for newsprint will be increased $2 a ton July 1 brings their price of $97 in line with most North American mills. N. Y. port price is $96.

Latest news on the proposed British purchase of newsprint with ECA funds comes from London dated June 3 when the House of Commons was told by Harold Wilson, president of the Board of Trade, that the government had asked the U. S. to include newsprint in the British allotment of foreign assistance funds for the year. An allotment of $88,000,000 worth had been asked. Previously Mr. Wilson had said that increased supplies of pulp from Scandinavia and greater output of British newsprint would be counted on to maintain the present 4-page daily, perhaps to increase it to five by 1949. At present, British paper mills are producing only about 27 percent of capacity because of lack of raw materials, and though suggested source of supply is Newfoundland's 60,000 cords of pulpwood, no action in this direction has been reported. Commenting on the Scandinavian supply, Mr. Wilson stated shipments are exposed to risks and uncertainties which do not apply to imports from North America, and that the delivered cost of Scandinavian pulp is 50 percent higher than that of imports from North America.

The Finnish Newspaper Association reported that 308,644 short tons of newsprint will be exported this year, of which the U. S. will receive 126,764 short tons and the U.S.S.R. 38,580 short tons.

Indexes

Index of general business activity for the week ended May 29 rose to 151.7 from 150.7 in the preceding week, compared with 145.8 in the corresponding week of 1947.

Index of paperboard production climbed to 203.4 from 197.0 in the preceding week, compared with 209.9 for the corresponding week of 1947.

Comparative indexes for paper and paper board production as reported by AP&PA are shown in Table I.

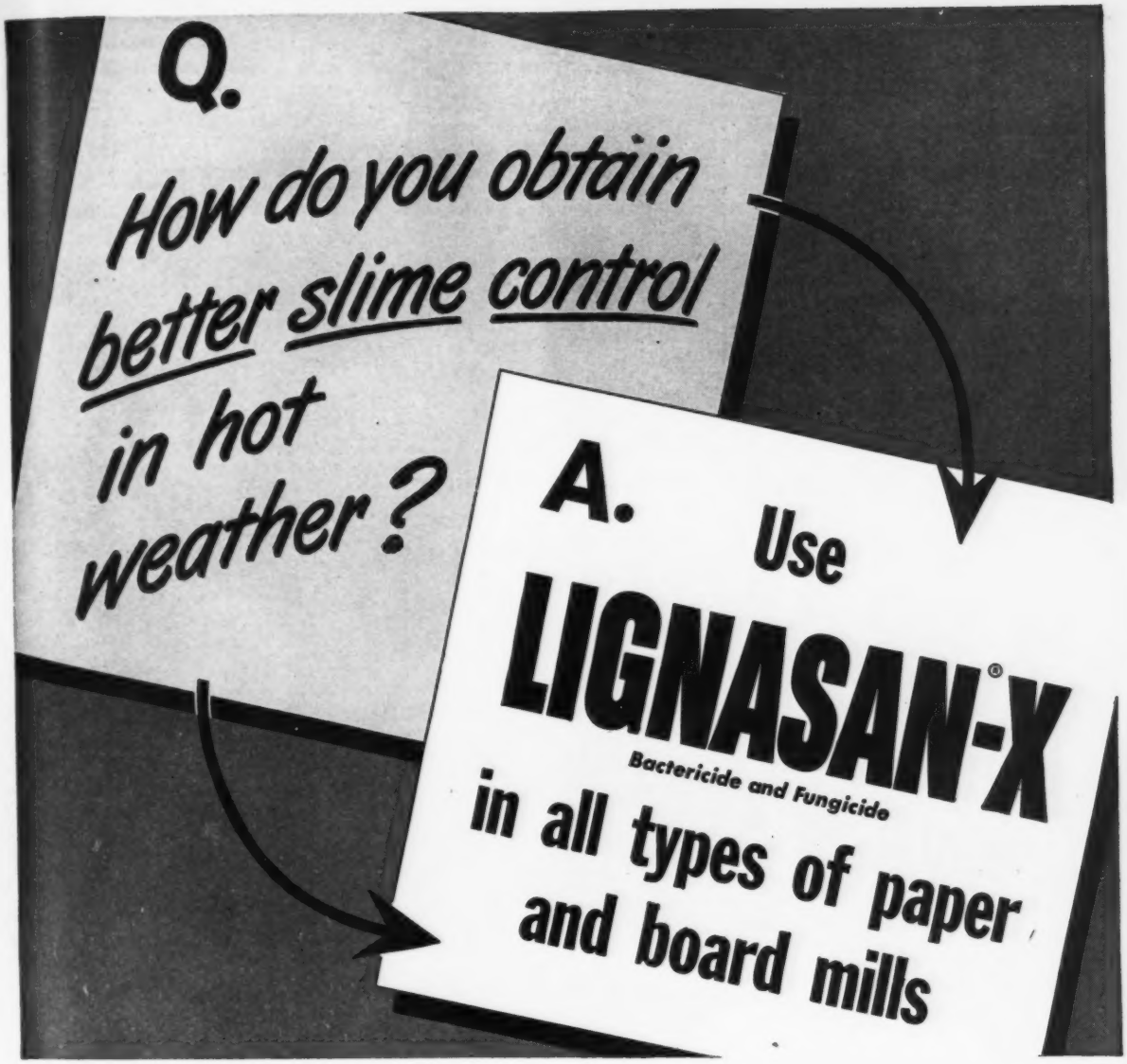
Table I—Index of Paper and Paper Board Production

	May 29 1948	May 22 1948	May 31 1947	June 1 1946	June 2 1945
Paper*	98.9	100.3**	105.6	96.3	87.9
Paperboard	100.0	100.0	98.0	85.0	93.0

* Tonnage production was 14.1 percent greater than last year's although because of 13.3 percent increase in 1948 capacity, this year's production ratio is lower.
** Revised.

Paperboard Production Statistics

	For Weeks Ended			
	May 29 1948	May 22 1948	May 31 1947	Month of May 1948
Production	191,650	189,359	177,998	761,541
New Orders	180,297	170,701	181,398	720,609
Unfilled Orders	352,013	363,959	511,918	352,013


Q.
How do you obtain better slime control in hot weather?
A. Use
LIGNASAN®-X
Bactericide and Fungicide
in all types of paper and board mills

Better the year round for slime control, "Lignasan"-X is *especially* effective during hot, humid weather when slime build-ups are most serious . . . and water supplies are at a minimum. Added to closed systems, "Lignasan"-X enables you to maintain a slime-free operation using a minimum of make-up water.

Complete Slime Control—"Lignasan"-X keeps the system clean, all the way to the paper machine, by eliminating slime build-ups in pipes, screens, chests and headboxes. Even during the worst weather for slime, it minimizes shutdowns for wash-ups.

Low-Cost . . . Quick Acting

"Lignasan"-X is inexpensive and economical to use . . . only a few ounces per ton of fiber do the job in most cases. And it goes right to work, too, because it is water soluble for quick action.

We will supply you full details on the latest and most efficient methods of using "Lignasan"-X.

E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington 98, Delaware.

DU PONT
LIGNASAN®-X
BACTERICIDE AND FUNGICIDE
DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

IMPORTS

NEWSPRINT

News Syndicate Co., Colabee, Bair Comeau, 7737 rolls.
Daily Mirror, Inc., Ethel Tombs, Gatineau, 301 rolls.
News Syndicate Co., Samconon, Baie Comeau, 6320 rolls.
New York Times, Theokester, Botwood, 3609 rolls.
News Syndicate Co., Mimi, Thorold, 1986 rolls.
R. A. Olsen, G.D.D., Donnacona, 388 rolls.
News Syndicate Co., Ted, Thorold, 2030 rolls.
H. G. Craig Co., Donpaco, Donnacona, 367 rolls.
Madden Reeve Angel & Co., Inc., Mormacmail, Kotka, 129 rolls.

WRAPPING PAPER

Corn Exchange Bank Trust Co., Stockholm, Gothenburg, 104 bls., 14 rolls.

PAPER NAPKINS

H. W. Robinson Co., Mormacmail, Copenhagen, 12 ctns.

SERVIETTES

(———), Britannic, Liverpool, 7 crates crepe paper).

TISSUE PAPER

B. F. Drakenfeld & Co., Britannic, Liverpool, 11 cs. (pottery), 25 cs.
J. E. Bernard & Co., Britannic, Liverpool, 2 kegs (pottery).
B. F. Drakenfeld & Co., Fort Spokane, Liverpool, 15 cs. (pottery).

GUMMED PAPER

B. F. Drakenfeld & Co., Fort Spokane, Liverpool, 179 cs.

PARCHMENT PAPER

George Lippelgoes, Ames Victory, Antwerp, 6 cs.
George Lippelgoes, Union Victory, Antwerp, 2 cs.

WALLPAPER

Hudson Shipping Co., Indochinois, Havre, 5 pkgs.
L. K. Soderberg, Stockholm, Gothenburg, 1 pcl.

DRAWING PAPER

H. Reeve Angel & Co., Inc., American Counselor, London, 3 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Counselor, London, 29 cs.

PHOTO PAPER

American Express Co., American Counselor, London, 100 cs. (base paper).

GOLD SCROLL PAPER

Yardley & Co., American Counselor, London, 2 cs.

NEW YORK IMPORTS

WEEK ENDING JUNE 5, 1948

SUMMARY

Newsprint	22,867 rolls
Wrapping Paper	104 bls., 14 rolls
Paper Napkins	12 ctns.
Serviettes	7 cts.
Tissue Paper	2 kegs, 51 cs.
Gummed Paper	179 cs.
Parchment Paper	8 cs.
Wallpaper	1 pcl., 5 pkgs.
Drawing Paper	3 cs.
Filter Paper	29 cs.
Photo Paper	100 cs.
Gold Scroll Paper	2 cs.
Sulphite Paper	769 rolls
Cardboard	30 cs.
Miscellaneous Paper	461 rolls

SULPHITE PAPER

Green Kriegsman Paper Co., Stockholm, Gothenburg, 285 rolls.
National Foil Co., Stockholm, Gothenburg, 207 rolls (unbleached).
Triangle Paper Bag Manufacturing Co., Stockholm, Gothenburg, 277 rolls.

CARDBOARD

Intermaritime Forwarding Co., John B. Waterman, Antwerp, 30 cs.

MISCELLANEOUS PAPER

Triangle Paper Bag Manufacturing Co., Stockholm, Gothenburg, 286 rolls.
Public National Bank Trust Co., Stockholm, Gothenburg, 38 rolls.
Chemical Bank Trust Co., Stockholm, Gothenburg, 86 rolls.
Lafayette National Bank, Stockholm, Gothenburg, 51 rolls.

RAGS, BAGGINGS, ETC.

J. Eisenberg & Son, Agwidale, Havana, 62 bls. rags.
(———), Eucadia, Glasgow, 67 bls. bagging.
(———), Escanaba Victory, Piraeus, 39 bls. rags.
(———), American Builder, Manchester, 91 bls. cotton rags.
Crane Co., American Builder, Manchester, 30 bls. linen cutting waste.
E. J. Keller Co., Inc., American Scientist, Havre, 46 bls. new cotton rags.
A. de Vries Trading Corp., American Scientist, Havre, 125 bls. rags.
American Express Co., Britanic, Liverpool, 12 bls. rags.
(———), Britannic, Liverpool, 47 bls. rags, 5 bls. wool thread waste.
American Express Co., Fort Spokane, Liverpool, 19 bls. wool rags.
(———), Fort Spokane, Liverpool, 24 bls. wool rags, 25 bls. thread waste.
Green Textile Associates, Dona Aniceta, Shanghai, 100 bls. cotton waste.
National City Bank, Kong Haakon VII, Alexandria, 83 bls. old heavy bagging, 80 bls. old light hessian bagging, 123 bls. heavy jute bagging, 105 bls. hessian bagging, 75 bls. scrap bagging, 84 bls. bagging.
Irving Trust Co., Kong Haakon VII, Alexandria, 9 bls. old light hessian bagging, 30 bls. old bagging.
(———), Robert Maersk, Rouen, 245 bls. cotton waste.
A. de Vries Trading Corp., Robert Maersk, Rouen, 62 bls. paperstock.
Irving Trust Co., Robert Maersk, Rouen, 54 bls. bagging.
E. J. Keller Co., Inc., Robert Maersk, Rotterdam, 135 bls. rags.
(———), Montevideo, Buenos Aires, 11 bls. wool waste.
J. Eisenberg & Son, Montevideo, Buenos Aires, 37 bls. rags.
H. Adlerstein, Flying Independent, Genoa, 30 bls. old jute rags.
(———), Pres. Buchanan, Bombay, 150 bls. old jute rags.
Williamson & Northrup, Mormactide, Santos, 35 bls. thread waste.
A. de Vries Trading Corp., Union Victory, Antwerp, 64 bls. scrap bagging.
E. J. Keller Co., Inc., Union Victory, Antwerp, 84 bls. old bagging.
Loumar Textile By-Products, Inc., Union Victory, Antwerp, 129 bls. old waste bagging.
National City Bank, Khedive Ismail, Alexandria, 59 bls. old light hessian bagging.

OLD ROPE

P. J. Schweitzer, Mahanada, Calcutta, 320 bls. hemp rope cuttings.
(———), Mahanada, Calcutta, 35 bls. hemp rope cuttings.
(———), Cape Friendship, Calcutta, 190 bls. old hemp rope cuttings.
(———), City of Doncaster, Calcutta, 145 bls. hemp rope cuttings.

CASEIN

Balfour Guthrie & Co., Mormacwave, Buenos Aires, 500 bags.
American Key Products Co., Mormacwave, Buenos Aires, 600 bags.
E. Lang, Mormacwave, Buenos Aires, 1834 bags.
American Plastics Corp., City of Newport, Melbourne, 1000 bags (rennet).
Union Bank of Australia, City of Newport, Sydney, 480 bags.

GLUESTOCK

John Gorvers, Santa Sofia, Maracaibo, 99 bdls.
(———), Emma Bakke, Tel Aviv, 227 pkgs.

WOODPULP

Price & Pierce, Ltd., Markland, Liverpool, N. S., 2369 bls. unbleached sulphite pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 5, 1948

Leigh Textile Co., American Builder, Manchester, 87 bls. bagging.
Pulp Sales Corp., Mormacmail, Kotka, 570 bls. prime strong bleachable unbleached sulphite pulp.
Madden Reeve Angel & Co., Inc., Mormacmail, Kotka, 144 rolls, newsprint, 342 rolls wrapping paper.

Condor's Compensation Principle

. . . Prolongs the Life of This Belt

This 16" Condor Compensated Belt is operating the main drive in a large southern lumber mill. Note the two large idler pulleys are putting considerable strain on this belt. However, when the photo was taken, this Condor Belt had already been in service 3 years. The pleased owners reported,

"This belt has outworn all others and looks good for at least three more years."

On lumber mill drives, factory line shafts, big pumps, generator drives, etc., Condor Compensated Belts "outwear the field", because they are engineered for equalized ply stresses.

In regular belt construction, the outer plies take excessive strain when flexed over pulleys. The inner plies "relax" as the inset shows. Condor's Compensation Principle insures equal pull in every ply regardless of size of pulleys or load and tension. Make Condor Compensated your choice for drives demanding extra belt strength and long service.

Manhattan offers a range of four driving tension surfaces on rubber transmission belts. Also Endless Cord, Non-Spark, Oil-Proof and Acid-Proof constructions. Belts can be factory-made endless or field vulcanized by the Condor-Weld method. All Manhattan endless belts have the patented Extensible-Tip outer-ply splice which prolongs belt life 3 to 10 times. Literature on request.

RAYBESTOS R M MANHATTAN

RAYBESTOS-MANHATTAN INC.

Keep Ahead with Manhattan

MANHATTAN RUBBER DIVISION **PASSAIC, NEW JERSEY**

PRICES

The quotations given below are indicative of trends in an open market. At the moment they can be of little more value, for while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

NEW YORK

Paper

(Delivered New York)

Standard News, per ton—	
Rolls, contract	$93.00/$96.00
Sheets	108.00/109.00
Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.	
Superstandard Wrapping	$9.00/ —
No. 1 Wrapping	7.25/ 8.00
Standard Wrapping	6.50/ —
Standard Bag	6.50/ —
Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.	
Wh. No. 1 Frd.	$1.84/$2.00
Wh. No. 1 M. G.	1.94/ 2 00
Wh. No. 1½	1.60/ —
Wh. No. 2	1.75/ —
Kraft Anti-Tar	1.65/ —
Kraft Unbl.	1.85/ —
Manila No. 2	1.62/ —
Shred. Wh. No. 1 cwt.	1.10/ 1.50
Toilet—Per Case of 100 rolls -1 M Sheets.	
Unbleached	$8.50/$10.00
Bleached	8.50/ 10.00
Paper Towels—Per Case of 3750—Zone 1.	
Wh. Jr. M'tif'd 9¼x9¼	$5.15
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15
Manila—per cwt.—C-l. f.a.	
No. 1 Jute Tag	$14.50/ —
Reg. Jute Manila	13.25/$15.50
No. 1 Manila	9.75/ —
5 lb. Manila	10.75/ 11.25
Boards, per ton—	
Plain News	$92.50/ —
Filled News	94.00/ —
Plain Chip	90.00/ —
Sgl. Mla. L-d. Chip*	100.00/102.50
White Pat. coated*	120.00/ —
Kraft Liners 42 lb.	100.00/ —
Kraft Corr. .009	105.00/ —
Binders Boards	126.00/ —

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, 16 lb.

Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext.			
No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Ledgers, per cwt.

100% Rag Ext.			
No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—White, 16 lbs.

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60
(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delievered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/$81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/185.00
Unbleached Sulphate Northern	125.00/155.00
Unbleached Sulphate Southern	130.00/145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Reg. North. Kraft	125.00/130.00
Unbleached Sulphite	125.00/126.00
Bleached Sulphite	125.00/135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Sideruns Pulping News	80.00/ 90.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations
On dock, Atlantic Ports

Bleached Kraft	185.00/195.00
Bleached Sulphite	185.00/195.00
Unbleached Sulphite	130.00/175.00
Unbleached Kraft	140.00/147.50

Finnish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/157.00
Unbleached Sulphate	147.50/ —

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commision)

White Shirt	$11.50/$12.00
Unbleached Muslin	12.00/ 12.50
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.00/ 6.25
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.50/ 8.00
Unbleachable Khaki	6.50/ 7.00
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.50/ $6.00
No. 1 Whites Miscellaneous	4.50/ 5.00
No. 2 Whites Repacked	3.50/ 3.75
No. 2 Whites Miscellaneous	3.00/ 3.50
Blue Overalls	3.75/ 4.00
Thirds and Blues Repacked	3.25/ 3.50
No. 1 Roofing Rags	1.70/ 1.80
No. 2 Roofing Rags	1.60/ 1.70
No. 3 Jute Bagging	1.50/ 1.60
No. 4 Brussels and hard back carpets	1.50/ 1.60
No. 5A Roofing Rags	1.50/ 1.60

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N.Y.)

	Per 100 lbs.
New Dark Cuttings	$5.50/ $5.75
New Mixed Cuttings	6.25/ 6.50
Light Silesias	9.25/ 9.50
Light Flannelettes	9.25/ 9.50
New White Cuttings	12.00/ 13.00
New Unbleached Cuttings	12.25/ 13.00
Fancy Shirt Cuttings	6.50/ 7.00
Light Prints	7.75/ 8.00
Bleachable Khaki, No. 1	7.00/ 7.50
Unbl. Khaki, No. 1	6.25/ 6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.
No. 1 White Linens	$14.00/$16.00
No. 2 White Linens	12.00/ 13.00
No. 3 White Linens	8.00/ 9.00
No. 4 White Linens	8.00/ 9.00
No. 1 White Cottons	8.00/ 10.00
No. 2 White Cottons	7.00/ 8.00
No. 3 White Cottons	6.00/ 6.50
No. 4 White Cottons	4.00/ 4.50
Extra Light Prints	6.50/ 7.00
Old Light Prints	4.50/ 5.00
Med. Light Prints	4.00/ 4.50
Dutch Blue Cottons	5.25/ 5.50
Checks and Blues	4.00/ 4.25
Linsey Garments	2.35/ 2.50
Dark Cottons, European	2.25/ 2.30
Dark Cottons, Egyptian	3.25/ 3.50
Old Shopperies	2.20/ 2.30
New Shopperies	2.25/ 2.30

Bagging

(Prices to Mill, f.o.b. N.Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$6.75/ $7.25
Domestic Gunny, No. 1	6.75/ 7.25
Heavy Wool Tares	6.25/ 6.50
No. 1 Scrap Bagging	5.50/ 5.75
Roofing Bagging	1.50/ 1.75
Foreign Manila Rope	6.00/ 6.75
Domestic Manila Rope	6.50/ 6.75
Jute Strings	5.00/ 5.25
No. 1 Sisal Strings	5.25/ 5.50
Mixed Strings	1.75/ 2.50

Waste Paper

Base Prices to Mills for Average Packings

(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$155.00/$165.00
No. 1 Hard White Envelope Cuts	145.00/ 155.00
No. 1 Hard White Shavings, unruled	140.00/ 150.00
No. 1 Hard White Shavings, ruled	110.00/ 130.00
Soft White Shavings, one cut	140.00/ 150.00
No. 1 Soft White Shavings	125.00/ 135.00
Soft White Shavings, Misc.	115.00/ 125.00
No. 1 Fly Leaf Shavings	45.00/ —
No. 1 Groundwood Fly Leaf Shavings	35.00/ —
N. 1 Heavy Books & Magazines	25.00/ 26.00
Mixed Books	15.00/ 18.00
No. 1 White Ledger	75.00/ 80.00
Col. Ledger	55.00/ 60.00
Manila Tab. Cards	95.00/ 100.00
New Manila Envelope Cuttings, one cut	100.00/ 110.00
New Manila Envelope Cuttings	65.00/ 75.00
Extra Manilas	25.00/ 30.00
Mixed Kraft, Env. & Rag Cuttings	75.00/ 85.00
Kraft Envelope Cuttings	100.00/ 110.00
Triple Sorted, No. 1 Brown Soft Kraft	65.00/ 75.00
New Kraft Corrugated Cuttings	70.00/ 75.00
No. 1 Assorted Old Kraft	50.00/ 55.00
New Jute Corrugated Cuttings	27.00/ —
Old 100% Kraft Corrugated Containers	35.00/ 40.00
Old Corrugated	23.00/ 25.00
No. 1 News	11.00/ 12.00
No. 1 Mixed Papers	9.00/ 10.00
Box Board Cuttings	— / —
White Blank News	75.00/ 85.00
Overissue News	16.00/ 17.00
Mill Wrappers	22.00/ 24.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—	
India	.33¾/ .35
Fine India	.38¾/ .42½
Fine Polished	
Unpolished—	
Paper Makers	.28¾/ .30¾
Tube Rope	.29 / .31½
Wrapping	.32 / .35¾
Cotton	.63¾/ .66¾

(Hard Fiber)

Mex. Sisal	.21 / .27
Manila (Reprocessed)	.30 / .32

(American Hemp)

Polished Hemp	.36¾/ .60
Unpolished	.32¾/ .54

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.11 / .12
New White No. 2	nominal
Light Silesias	.07½/ .08
Black Silesias, soft	.06½/ .07
New Unbleached	.10½/ .11¼
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07½/ .08
Cottons—According to grade—	
Washable Shredding	.03½/ .04
Fancy Percales	.06¾/ .07¼
New Black Soft	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.06 / .06½
Bleachable Cotton Cuttings	.07 / .07½
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75
Thirds and Blues—	
Miscellaneous	2.25 / 2.50
Repacked	2.75 / 3.00
Roofing Stock—	
Foreign No. 1	nominal
Domestic No. 1	1.85 / 1.90
Domestic No. 2	1.75 / 1.80
Roofing Bagging	1.65 / 1.70
Old Manila Rope	6.25 / 6.50

Domestic Rags (Old)

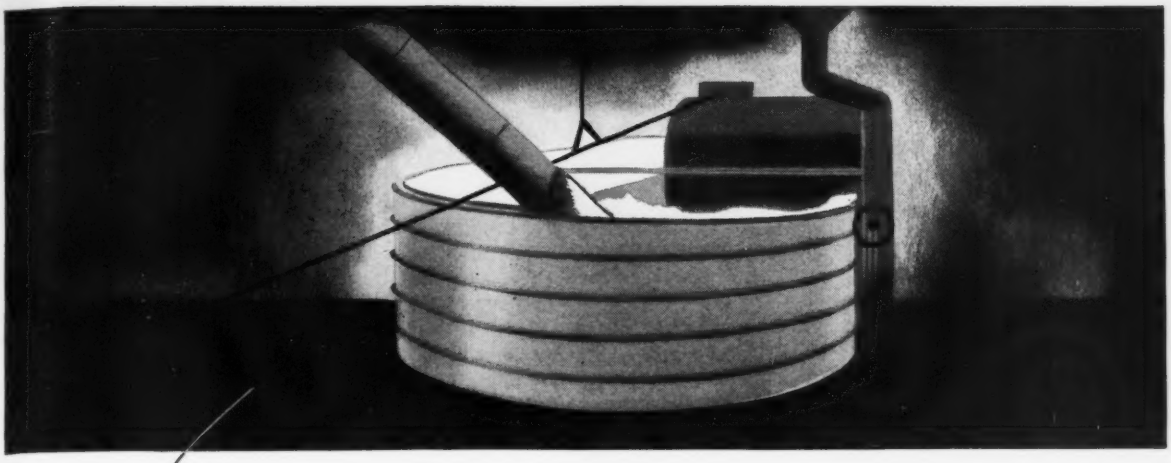
(F.O.B. Eastern Shipping Point)

White No. 1 —Repacked	4.50 / 5.00

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—	
Foreign	nominal
Domestic	4.75 / 5.25
No. 1 Clean Bright—Sisal Strings	.04½/ .05
No. 2 Clean Bright—Sisal Strings	.03½/ .04
Sisal Jute	.02¼/ .03
Scrap—	
No. 1	5.00 / 5.50
No. 2	2.50 / 3.00



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Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00/	$115.00
No. 1 Hard White Shavings, unruled	100.00/	—
Soft White Shavings, One cut	90.00/	95.00
White Blank News	75.00/	—
Soft White Shavings	80.00/	—
No. 1 White Ledger	85.00/	90.00
No. 1 Heavy Books & Magazines	24.00/	26.00
Overissue Magazines	nominal	
New Manila Envelope Cuttings	80.00/	—
No. 1 Assorted Old Kraft	60.00/	65.00
No. 1 Mixed Paper	11.00/	12.00
Box Board Cuttings	10.00/	11.00
Kraft Corrugated Cuttings	90.00/	100.00
Old Corrugated	24.00/	26.00
Overissue News	20.00/	22.00
No. 1 News	13.00/	15.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	6.25	/ 6.75
No. 1 Hard White Shavings, ruled	6.00	/ 6.50
Soft White Shavings, Misc.	6.00	/ 6.25
No. 1 Fly Leaf Shavings	—	/ —
No. 2 Fly Leaf Shavings	4.25	/ —
No. 1 Groundwood Fly Leaf Shavings	1.75	/ 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	/ 1.75
Mixed Colored Shavings	2.00	/ 2.25
New Manila Envelope Cuts, one cut	4.50	/ 4.75
Hard White Envelope Cuts, one cut	7.00	/ —
Triple Sorted No. 1 Brown Soft Kraft	3.75	/ 4.00
Mixed Kraft Env. & Bag Cuttings	4.00	/ 4.25
Kraft Envelope Cuttings	5.00	/ 5.50
No. 1 Heavy Books & Magazines	1.75	/ —
New Manila Envelope Cuttings, one cut	—	/ —
New Manila Envelope Cuttings	4.00	/ 4.25
White Tabulating Cards	5.00	/ —
Groundwood Tabulating Cards	1.50	/ 1.75
White Blank News	2.25	/ 2.50
No. 1 Assorted Old Kraft	3.50	/ 4.00
No. 1 Mixed Paper	.47½/	—
Overissue News	.90	/ 1.00
No. 1 News	.55	/ .60
Box Board Cuttings	.60	/ .70
New Corrugated Cuttings, Kraft	2.75	/ 3.00
Old Kraft Corrugated Containers	2.00	/ 2.25
Old Corrugated Containers	—	/ 1.10
Jute Corrugated Cuttings	1.07½/	—
Paper Strings	2.00	/ 2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—		
Foreign	—	/ 4.75
Domestic	6.25	/ 6.50
Sisal Rope No. 1	6.25	/ —
Sisal Rope, No. 2	5.50	/ —
Mixed Rope	3.00	/ —
Mixed Strings	1.60	/ —
Transmision Rope—		
Foreign	nominal	
Domestic	3.00	/ 3.50
Manila Rope—		
Foreign	nominal	
Domestic	6.50	/ —
Soft Jute Rope	6.25	/ 6.50
Jute Carpet Threads	6.00	/ —
Bleachery Burlap	—	/ 7.00
Scrap Burlap—		
Foreign	6.00	/ 6.25
Domestic	6.00	/ 6.25
South America	6.00	/ 6.25
Wool Tares		
Foreign	6.25	/ —
Domestic	6.25	/ —
Austr. Wool Pouches	7.50	/ —
New Zealand Wool Pouches	7.50	/ —
New Burlap Cuttings	6.50	/ —
Heavy Baling Bagging	5.25	/ 5.75
Paper Mill Bagging	5.50	/ 5.75
No. 1 Roofing Bagging	2.25	/ 2.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—		
New Light Prints	.07½/	—
Fancy Percales	.08	/ —
New White No. 1	.11	/ .11¾
New Light Flannelettes	.08	/ .08½
Canton Flannels, Bleached	.10	/ .11
Underwear Cutters, Bleached	.11½/	—
Underwear Cutters, Unbleached	.11	/ .12
Silesias No. 1	.08	/ .08½
New Black Silesias	.04½/	—
Red Cotton Cuttings	.05	/ —
Blue Overalls	—	/ .08½
Soft Unbleached	.11	/ .12
Blue Cheviots	.08½/	.09
Fancy	.06	/ —
Washable	.06	/ —
Khaki Cuttings	.06½/	.07½
Corduroy	.03½/	—
Men's Corduroy	.04½/	—
Ladies' Corduroy	.04	/ —
Khaki Canvas	—	/ .06
B. V. D. Cuttings	.11½/	—

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—		
Repacked	5.00	/ 5.50
Miscellaneous	4.50	/ 5.00
White No. 2—		
Miscellaneous	2.65	/ —
Twos and Blues, Repacked	2.75	/ —
Old Blue Overalls	4.00	/ 4.50
Thirds and Blues, Repacked	2.20	/ —
Miscellaneous	1.80	/ —
Black Stockings	3.50	/ 4.00
Roofing Stock—		
No. 1	1.70	/ —
No. 2	1.60	/ —
No. 3	1.50	/ —
No. 4	1.50	/ —
No. 5, Quality A.	1.60	/ —
Quality B.	1.50	/ —
Quality C.	.95	/ —
Old Manila Rope	6.00	/ —

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—		
No. 1 Hard White Envelope Cuts, one cut	$150.00/	—
No. 1 Hard White Shavings, runruled	140.00/	—
No. 1 Soft White Shavings	120.00/	—
No. 1 White Ledger	85.00/	—
No. 1 Heavy Books & Magazines	35.00/	—
White Blank News	80.00/	85.00
Mixed Kraft Env. & Bag Cuttings	90.00/	110.00
No. 1 Assorted Old Kraft	35.00/	—
Overissue News	24.00/	—
No. 1 News	21.00/	—
No. 1 Mixed Paper	13.00/	—
Old Corrugated	26.00/	—
Mill Wrappers	17.00/	—

MARKETS

Blanc Fixe

Demand continues strong. Prices firm. Pulp is currently quoted at $85 in bags, car lots at works, 6 cents per pound, l.c.l., deld.; by-product $75 per ton, car lots at works, 6 cents per pound, l.c.l, deld.

Bleaching Powder

Supply adequate. Delivery good. Prices range from $3.75 to $4 per 100 pound drums, l.c.l. works.

Casein

Low domestic output gives serious concern. Buying spotty. Prices steady. Current prices on processed acid precipitated casein at 31 to 33 cents per pound for domestic grades and 28 to 29½ cents for imported grades, f.o.b. shipping point.

Caustic Soda

Demand heavy. Supply worsened by extended strike. Price rise due July 1. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 to $4 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.25 per cwt.; liquid 73 percent in tank cars at $2.35 per cwt., at works.

China Clay

Domestic grades and imported in good supply. Filled is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine

Supply extremely tight. Production cut back by labor condition. Prices rise July 1. Currently quoted at $2.25 per cwt. in single unit tank cars, at $2.55 to $3.75 per cwt., in multi-unit tank cars, f.o.b. works.

Rosin

Supply good. Domestic buying poor. Production goes under loan, creating short supply and higher prices. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah; B, $6.50; G, H, I, K, $7.31. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $4.50 to $5; FF, $5.50 to $6.50.

Rosin Size

Seventy percent gum and pale wood grades. Supply ample. Demand good. Tank cars $5.75 to $6 f.o.b. southern shipping point.

Salt Cake

Demand continues ahead of supply with slight improvement in shipments. Production under contract. Domestic salt cake is quoted at $25 to $28.

Soda Ash

Supply tight. Deliveries behind schedule. Prices rise July 1. Current prices, car lots, per 100 pounds: in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

Sodium Bicarbonate

Strong demand with supply somewhat tighter. Reported as $1.85 per cwt. paper bags, carload lots.

Starch

Prices unchanged. Demand steady. Supply good. Pearl grade quoted at $7.00 per 100 pounds; powdered starch at $7.12 per 100 pounds; car lots, New York.

Sulphate of Alumina

Prices unchanged. Supply steady. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2 per 100 pounds in bags, car lots, at works.

Sulphur

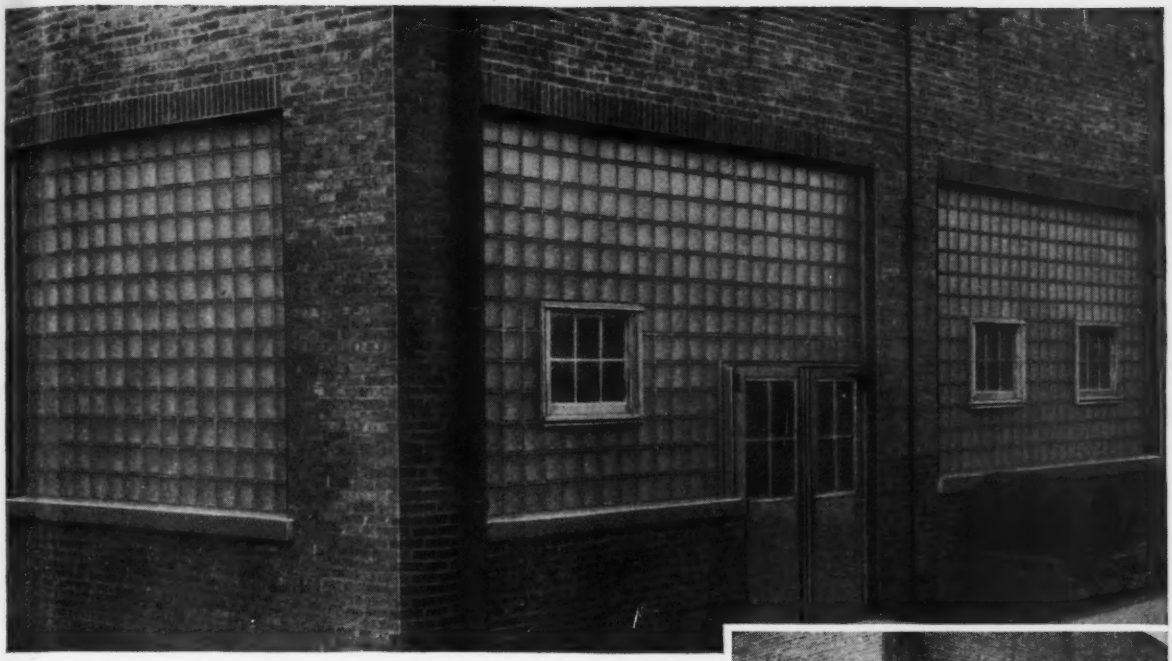
Production shows heavy gain. Prices unchanged. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

Talc

No change in domestic market. Demand continues far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

Titanium Dioxide

Demand continues ahead of supply with no early improvement seen. Prices unchanged. Shipments on allocation. Anastase 17½c pound carload lots, 18-18½c l.c.l., rutile, 19½c pound carload lots, 20-20½c l.c.l.; 50-pound bags, f.o.b. plant, minimum freight allowance.



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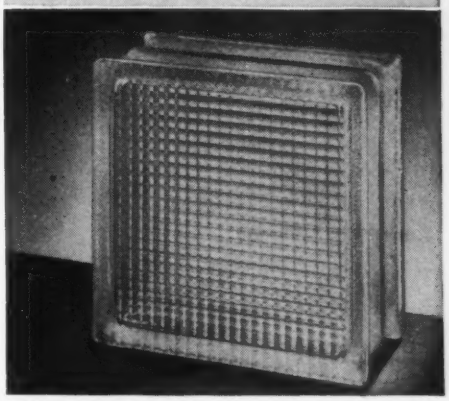

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OBITUARY

Walter E. Perry

Walter E. Perry, president of the Plymouth Paper Co., Holyoke, Mass., died of a heart attack at his home in Springfield, Mass., on May 31. Mr. Franklin joined the Franklin Paper Co., immediately upon completing his schooling and was with the firm for ten years. He then joined the Crocker-McElwain Co., and later went to Chicago, where he opened a branch office. Subsequently he became sales manager of the Chemical Paper Mfg. Co. He bought the Plymouth Paper Co. in 1929. Mr. Perry was president of the Salesmen's Ass'n., of the Paper Industry from 1925 to 1927.

Walter M. Blackford

Walter M. Blackford, 61, Strathmore Paper Co. executive, died at his home in Longmeadow, Mass., on June 1. He had been ill since last September, when he suffered a cerebral hemorrhage. Surviving Mr. Blackford is his widow.

Frederic W. Main

Frederic W. Main, 76, of Springfield, Mass., for 26 years associated with the sales department of the Worthy Paper Co., in North Agawam, died suddenly in his home at 19 Berkley street on May 31.

Mr. Main was for five years on the directorate of the Boston Paper Trade Ass'n and served for a time as regional vice-president of the American Institute of Graphic Arts in New York City.

Since retiring in 1942 he had continued to serve as a director of the Hurlbut Paper Co. in South Lee.

Southern Pulpwood Conservation Ass'n. to Meet June 22-23

DURHAM, N. C.—The summer meeting of the Southern Pulpwood Conservation Ass'n., will be held at the Washington Duke Hotel, June 22-23, with R. F. Weston, president, presiding.

On the opening day, C. F. Korstian, dean of the Duke School of Forestry will recount the history of Duke Forest; V. J. Rudolph, assistant professor of forestry management at the school will talk on "Cooperative Marketing of Forest Products," and A. E. Wackerman, professor of forest utilization, at the same school, will have as his subject, "Duke Plan for Foresters-In-Training."

Second and closing day of the meeting will be given over to examination of different types of thinnings in both natural and planted stands, harvest cuts and hardwood control; pulp thinning on Duke Forest by a pulpwood dealer; and inspection of the forest.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
April 24	102.5	April 26	105.3
May 1	103.5	May 3	107.5
May 8	102.4	May 10	107.9
May 15	100.4	May 17	105.3
May 22 (Revised)	100.3	May 24	105.1
May 29	*98.9*	May 31	105.6

COMPARATIVE MONTHLY SUMMARIES

1947						1948	
Jan.	102.1	May	106.2	Oct.	109.5	Jan.	100.9
Feb.	105.9	June	106.0	Nov.	109.3	Feb.	100.3
Mar.	106.1	July	93.5	Dec.	101.5	Mar.	100.6
Apr.	105.1	Aug.	104.2			Apr.	102.5
		Sept.	102.0	Year Avg.	104.3	May	*100.4*

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	92.6	100.8	88.9	88.3	88.6	99.9	105.3	*100.7*
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

NOTE: *As of January 10 capacity base increased by 13.3%.*

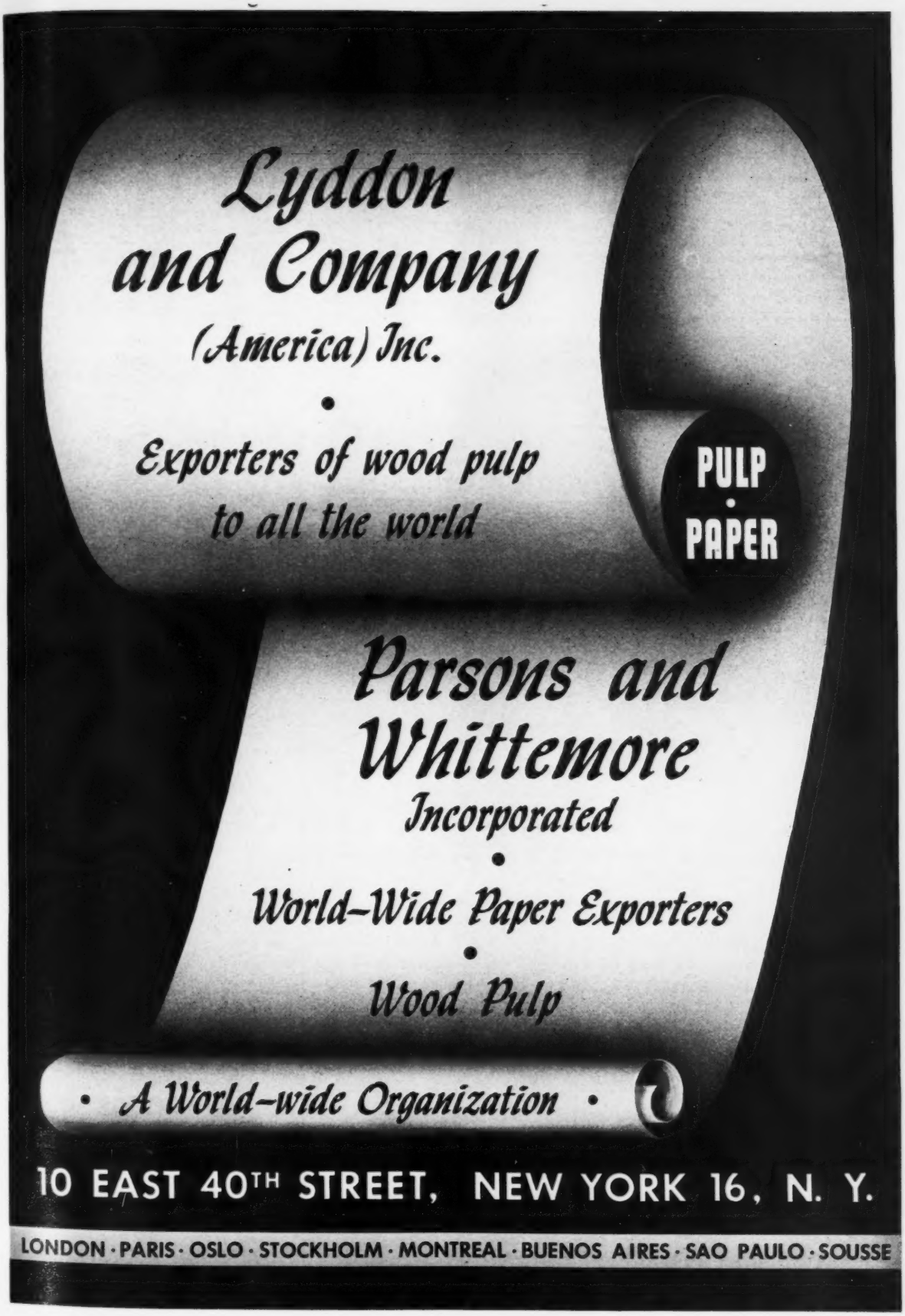
PAPERBOARD PRODUCTION RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
April 24	102	April 26	100
May 1	102	May 3	102
May 8	101	May 10	101
May 15	100	May 17	102
May 22	100	May 24	101
May 29	*100*	May 31	98

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	102	102	*100*								

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.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Wages Up Seven Cents At Two K-C Mills

NEENAH, Wis.—Hourly employes of the Lakeview and Badger-Globe mills of the Kimberly-Clark Corp. receive a general wage increase of 7 cents an hour under terms of a contract announced June 1. New Year's day will be an additional paid holiday. Negotiations leading to the contract were conducted between the corporation and Local 467, International Brotherhood of Papermakers and Local 482, International Brotherhood of Pulp, Sulphite & Paper Mill Workers. The settlement renews the contract for one year to May 31, 1949, but wage discussions will take place the first of the new year, union officers said.

A contract also providing for the 7 cent hourly increase effective May 31, was announced for the corporation's mill at Kimberly, Wis.

Wis. Industrial Commission Reports Paper Workers' Wages

MADISON, Wis.—Workers employed in the Wisconsin paper industry and in the manufacture of allied products averaged $51.92 a week during 1947, according to a report issued by the Industrial Commission of Wisconsin. The average work week was 44.0 hours, and hourly pay averaged $1.179.

The yearly summary was issued with the monthly report, summarizing earnings, hour, pay and the number of employes during the month of April.

The total number of employes during April declined 0.6 percent compared with March, the figures being 28,200 and 28,300 respectively. Average weekly payrolls declined 3.8 percent or $1,572,000 compared with $1,634,000 in March. The average weekly pay per worker was $55.78 for 43.3 hours, the hourly pay being $1.288.

Twenty manufacturers of paper and allied products in Milwaukee county reported a 3.0 percent decline in the number of employes on their payrolls, the total for April being 3,170. Average weekly payrolls were down 6.1 percent and totaled $172,623. The average worker earned $54.46 per week for 42.5 hours, which made the hourly rate $1.28.

3,100 Given 11-Cent Wage Boost

WATERTOWN, N. Y. — A $1,000,000 wage increase for the 3,100 employes of the St. Regis Paper Co. in northern New York will be provided in contracts to be signed as a result of management-labor conferences, the company announced.

The increase, retroactive to May 1, will be at the rate of 11 cents an hour until April 30, 1949. It brings the basic rate to $1.11 per hour, according to company spokesmen.

In addition, the company has granted an extra holiday to the workers—New Year's Day—making four in all. The others are Christmas, July 4 and Labor Day.

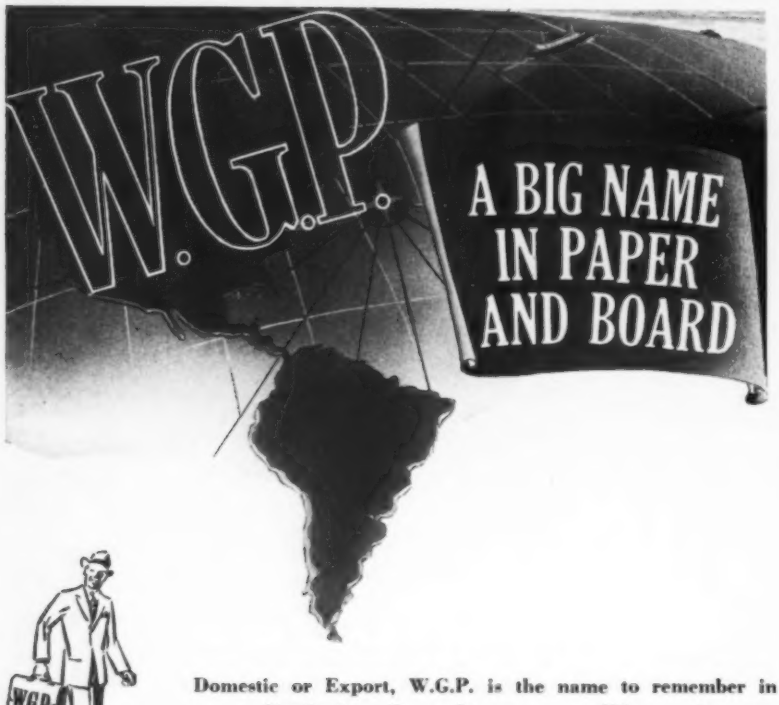
Affected by the new contract will be the paper and bag plants at Oswego, Watertown and Carthage and the paper mills at Deferiet, Herrings, Harrisville and Norfolk.

This is the second consecutive year that the company has boosted total pay in its northern New York plants by $1,000,000.

Unions covered are the International Brotherhood of Papermakers, the pulp and sulphite workers and the firemen and oilers, all AFL affiliates, and the machinists' union, independent.

Brightwater Employes Vote "No Union"

ADAMS, Mass.—Brightwater Paper Co. employes voted 152-54 on May 25 against representation by the CIO Textile Workers Union. Observers said the outcome of the NLRB-conducted election meant the United Mine Workers Union, District 50, current bargaining agent, will hold the role for another year. UMW was left off the ballot because its national officers had not signed anti-Communist affidavits under the Taft-Hartley law. Offered a choice between the Textile Workers and no union, the employes voted 54 for CIO, 152 for no union.



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INDUSTRIAL DEVELOPMENT

Application of Remote Control Devices to Diaphragm Valves

By R. T. Kidde—Hills-McCanna Co.
Chicago, Illinois

The title of this address immediately raises questions. What do we mean by "diaphragm valves". We cannot, certainly be interested in controlling these valves under any circumstances without knowing how they compare with conventional types used in control work. If their design is mathematically or hydraulically superior, what is the basis of the claim. If they are not, then on what grounds are they even considered here?

The name—diaphragm valve—confuses.

To many, diaphragm valves mean diaphragm control valves. Actually, in a diaphragm control valve, the diaphragm is not in the valve part at all. It is in the air motor, which, together with the valve chosen, constitutes an asembly which for years has gone by the name—diaphragm valve or diaphragm control valve.

We have some explaining to do.

The diaphragm valve we have in mind is the Saunders Patent Diaphragm Valve. The diaphragm refers to the means whereby we effect control of the flow. This valve is neither a gate, globe or plug cock. It has no discs—it is not a balance valve—there are no parabolic, ratio, or splined plugs, "V" ports, wedges or needles. There are no vanes. It is a diaphragm valve.

Yet, in a recent authoritative article by Bruce Irvin of the Hammeldahl Company, on the place of valve characteristics in selecting diaphragm control valves, this type was listed along with the others. It is an accepted type—but how does it stack up with the others. You see, we are back on the subject of valve behavior and must accordingly take into consideration the degree to which this device will carry out purposes desired in remote control work.

This diaphragm valve is a two directional flow, or so called two way, line stop valve, suitable for handling pressures up to about 150 psi and temperatures to about 180° F. in a size range ⅜" thru 14" in which we obtain closure by pressing a rubber or rubber line diaphragm down on a transverse weir.

It is just as well to hold everything at this point until there is definite understanding as to characteristics, virtues and defects of the valve that we are going to consider. Isn't it true that there is no point in working out any remote control designs at all unless the user will be satisfied with the performance of the unit that is to be under control.

That preamble is quite necessary—the objective is to justify the rather large amount of discussion time devoted to the characteristics of the diaphragm valve in the rest of this paper.

Conventional types of control valves are well known—there is an extensive literature and widespread familiarity. With your conclusions with respect thereto comfortably in your pocket so to speak, you can devote your entire attention to the means of operating it. You have a background against which you can project any scheme advanced and give a mental thumbs up or thumbs down to suggestions made.

We feel as regards the diaphragm valve that there is, for many, no established idea as to just what it is capable of—and we feel that giving an adequate explanation before offering discussion as to remote control devices will best aid you in deciding whether or not the complete installation is what you want. In other words, no matter how ingenious the components, it's the end results that we are after.

We will try to catch up, as previously stated, with long established conventional types in a matter of minutes and of course will have to ask for a certain amount of indulgence.

Let us make this diaphragm valve in our mind's eye by taking in imagination a short piece of curved pipe. Bend it against the arc, buckling it in the middle, but not enough to close. The result is a sort of "W". Now cut a hole something less in diameter than that of the pipe on the top side of the buckle or mid point of the "W".

Looking down into the hole we will find a ridge, a result of the buckle, extending across the bottom of the pipe at right angles to its length. If we could look lengthwise thru the pipe *this ridge* (we call it a weir) would appear as the lower or concave side of a lens. Next paint the edge of the hole with an adhesive and paste over the hole a round rubber tire patch. Liquid can now flow through this restored pipe. By thumb pressure on the patch we can alter flow. If by chance the contour of the thumb matches the concave ridge or weir, we can cut off flow. In practice we substitute a compressor for the thumb.

There is the diaphragm valve we plan to operate by remote control.

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INDUSTRIAL DEVELOPMENT

Paper Trade Journal, in this new section, proposes to make space available for discussion of administration and operational problems of the pulp and paper industry, as well as for the presentation of independent studies and research on technical and engineering subjects. Noteworthy features of paper mills, converting plants, associated industries and institutions also will be presented, as they become available. These pages will be open to all who are qualified to discuss subjects within these limits. Manuscripts, submitted for approval, will be welcomed.—E. P. McGINN, Industrial Editor.

Conversion into a usable commercial product is easy—but some comment is in order. The diaphragm is not a thin flexible piece of rubber, the usual picture that comes to mind when we say "diaphragm".

It is heavy and sturdy and stiff. It is built like a tire with canvas inserts.

On the average it is about ½" thick.

It is molded with a dome—looking very much like a low crown derby with a flat brim. On the top side of the dome and forming a part of the diaphragm is a nubbin.

Imbedded in the nubbin is a stud with an exposed thread section about ½-¼" in length which screws into the compressor (our thumb substitute) and our means for achieving positioning of the diaphragm. With no pressure on our tire patch and looking through the valve, the opening or aperture would appear lens shaped. For the thumb we have substittued a mushroom shaped compressor whose lower side is a curve concentric with that of the weir. At closure, the weir diaphragm and compressor together make a sandwich. To bring the diaphragm up to the weir just short of closure requires a load that is only a fraction of that required to squeeze press or mold the diaphragm to the seat.

In the cycle of closing and opening with accompanying passage through the horizontal the diaphragm buckles but not in the usual sense of the word—take our word for it there is no double hysteresis.

But it does take pressure to close the valve tight—that is to say to squeeze and compress it between the compressor and the weir so that it is molded and cupped or what have you, so as to close off flow.

It takes pull to get the diaphragm started off the seat—it takes stem travel—⅓" in the ½" valve to 10½" in the 14" size to go from pull open to close and reverse.

At no point is there any indication that we have a precision valve, or any indication that it is designed towards achievement of any particular flow characteristic. This valve reached its use as a control valve via the route of its ability to handle difficult flow conditions, leakage and bonnet clogging.

And since it is not a precision valve, and since its use as a control valve is something in the way of an afterthought, it will be helpful to review some reasons why it is a candidate to control problems in spite of a handicap.

We notice that the diaphragm seals off the bonnet assembly from the body. From a material standpoint the bonnet presents no problem. There is no necessity of stem packing. If the diaphragm will stand the service, it, in combination with the body, offers a smooth, unbroken throughput. We can make the body of any suitable machineable alloy—we can line relatively cheap cast iron bodies with rubber, glass, resins and the like. The diaphragm can be replaced without removing the body from the line.

We can, within pressure and temperature limits already stated, handle corrosives—abrasives in a superior manner. If to this we can add flow characteristics that are not too far removed from required minimums you can understand why we should take the trouble to apply remote controls to this type of valve.

Thorough testing of this diaphragm valve in research laboratories, supported by the findings of those in the instrument field permit description of its flow characteristics as linear. Its inherent characteristic curve or line lies between that of a conventional disc quick opening valve and that of a parabolic or linear plug—in fact nearer the latter. It, the diaphragm valve, gives almost full flow at 60%-80% open. Above that point increase in the lift does not appreciably alter flow. A point to remember in our subsequent discussion of air motor application.

While calling our flow characteristic linear we do not for a minute, claim the same degree of linearity as that attainable in a parabolic plug. As additional compensation, however, turbulence is only a fraction of that encountered in conventional control valves.

In other words, if a parabolic or ratio plug would be preferred mathematically, but entails problems of fouling, fermentation, corrosion, sticking, failure to seat and difficulty of repair, then a diaphragm valve eliminating or lessening these problems with an inferior degree of mathematical desirability is definitely in the running. Economic throttling and control wins over the physical.

We can now explore the remote control applications.

The simplest—namely: extended stem—needs little comment.

The stem loading required to close the valve calls for adequate torque at the control station, with due regard for alignment of shafts, supports, and the fact that bevel gears result in a theoretical reduction in torque of about 20% for each group of gears—we think in practice this figure should be nearer 30%. Stem travel of our valve is no problem in this application.

Next, solenoids *directly* mounted on the sliding stem type might occur to you. They neither have the power or the stem travel to make their use practical. However, we are not dismissing them entirely—we will use them in a different way.

Electric motor operators are feasible and practical. Where the motor operator works in conjunction with the sliding stem type of valves the requirements of stem travel and stem loading have limited the design to the ½" thru 1¼" sizes. Where geared electric motor operated types are used in conjunction with the handwheel design the low limit has been 2" and the largest 12". The degree of control is of course limited by the performance and response characteristics of the electrical equipment involved. (Torque Switch—2 button—3 button).

Sealing of the bonnet and the introduction of air and water into the bonnet is an intriguing idea. It works after a fashion, however, with stem and compressor eliminated bonnet pressure working against valve line pressure distorts the diaphragm. If the diaphragm now is not centered as it comes down it is convex on the upstream side, concave on the downstream and comes down on the weir at an angle. Sawing of the diaphragm ensues. We have never been able to lick the problem of wear satisfactorily to ourselves in spite of the fact that some users seem to have been satisfied. It would appear to be acceptable means of operation where the remote control thereby achieved calls either for simple open and shut service or for throttling against line pressure with only approximate control of diaphragm position.

We are now ready to take on that type of remote control towards which we have been really pointing all the time—air motor valves. As previously mentioned, the manufacturers of this type of operator consider our diaphragm valve as one of the standard types of valve which in conjunction with their devices constitute acceptable control valves for certain types of service.

This makes available for remote control problems (1) simple open and shut service (2) throttling (3) throttling with positioner control. Your familiarity with this well known group of operators makes unnecessary comment as to installation, design features involving instrument air, regulating devices, etc.

But as you were warned earlier our diaphragm valve is unbalanced, valve line pressure acting on the diaphragm gives an upward push requiring stem load, nesting or molding the diaphragm calls for stem load—for example at 15 psi a ½" valve required a stem load of 115#—a 4" valve requires a stem load of 1200#. An 8" valve requires a stem thrust of 1600#.

Let's not forget stem travel requirements. A ½" valve calls for about ⅓"; a 4" valve calls for about 2½"; and an 8" valve calls for about 6".

It is clear that standard air motors with their stem travel of approximately 2" as remote control operators, reach the limit of application to a Hills-McCanna diaphragm valve at about the 4" size. We say about 4". Remember in our discussion of flow characteristics that in our valve full flow is attained at about 60% open. Some diaphragmmotors with a stem travel of say 3" maybe 4", can clearly secure full flow where the 3" or 4" of stem travel represents 60 to 80% of our stem travel—in this case 6 and 8" valves. This is all right provided control of quantity is all you are after. If full aperture is desirable say as in the handling of pulp in order to reduce possibility of clogging, then this arrangement is not the answer.

Further, as valve line pressures mount so do the requirements for stem loading—an 8" valve at valve line pressure of 75 psi calls for 5800# of stem loading.

Since air motors rarely operate above 25 psi (the customary upper limit of the instrument air used in conjunction with them) operators large enough for our purposes would be cumbersome and expensive.

What to do to overcome these problems and in addition take care of valves in the 10" and 12" sizes?

One of the large and progressive pulp preparation equipment companies started us on the answer.

Use higher air pressures for operation—say in the 40 to 125 psi range.

Use smaller air cylinders.

We did so.

On our sliding stem series in valve sizes 4" thru 12" —carrying on where the standard air motors leave off—we mounted standard railway freight car double acting air cylinders—connecting the stem of the cylinder piston to our stem.

Control of the unit is achieved in our case with the Westinghouse Flexair Valves, or with solenoids on the air lines for simple open and shut service. The Flexair deserves a moment's digression.

It is a self lapping valve built on the balance piston principle.

On one side of the piston is a spring—a graduating spring. Its strength is that of air system operating the valve. The position of the lever or handle of the Flexair determines the compression, imposed on this spring. The other side of the piston is open to the air pressure operating the valve.

When spring pressure is greater than air pressure, the piston moves with the spring—a valve is then open, air is admitted until its pressure is filled up to that of the spring. This results in a reversed movement of the piston shutting off the air when the two pressures on either side of the piston are in balance.

If the discussion accorded this particular design is rather on a sketchy side is because we are sure that this type of valve is familiar to most of you.

If the spring pressure changes because of a new setting or leakages, the resulting unbalance of pressures moves the piston and its valve with consequent admission of additional air or bleeding of excess pressure so as to bring back the pressure delivered to our valve as called for by the Flexair handle position.

With this device in a sample form ordinary open and shut operation by remote control is easy.

With this device as described above, throttling is equally feasible. We do modify the design by using another Westinghouse control valve known as their H 3 Operator or Controlair—a coined word—this accomplishes the same end result of maintaining constant any desired pressure as does the Flexair. Except that the Flexair has a handle like a gear shift calling for manual operation while the H 3 or controlair does the same thing thru the ¼" travel of a small spring loaded pin. We mount the roller on the coupling connecting our stem to that of the cylinder piston. The H 3 is placed on the underside of the air cylinder in such a way that a cam bar hinged slightly above the H 3 and bearing against the pin 1 spoke of on one side and the roller on the other. Movement of the stem results in movement of the pin, which in turn feeds desired increments of increasing air pressure as counter air pressure to the underside of the cylinder piston as it moves downward to close our valve. Upward travel of course means decreasing increments. This arrangement makes, we think, for better control. In any event, we now have a throttling valve with remote control. A variation of the above is to use the H 3 in such a way—without a can bar—as to maintain at all times a constant pressure on the underside of the piston, giving us a pneumatic spring. In practice this has worked out very satisfactorily.

Clearly, however, changes in valve line pressure will alter our valve aperture. Whether this is objectionable or not depends somewhat upon conditions.

If the pressure variation is independent of valve action—I mean if the variation stems from a reciprocating pump or a large capacity system so that changing flow in the valve means just that, then the Flexair handle setting must be changed to meet the new situation. If the source of pressure is a tank level or centrifugal pump where changes in valve flow are reflected at the source of pressure, then this diaphragm valve acts as an automatic regulator tending always to return flow conditions to their original state.

The foregoing designs have been extensively used in large pulp mills. Centralized control, permitting simultaneous or sequential operation, is achieved by mounting the Flexaire or solenoid switches in a console in banks of one or more.

But the valve is not positioned—yet.

We achieve it by loading the underside of the piston of the air cylinder with the H 3 valve (a pneumatic spring device) and feeding instrument air for remote control to a special positioner mounted on the valve air cylinder assembly which in turn can supply adequate air operating pressure in the neighborhood of 80 to 125 psi.

A newcomer in the remote control field is a modification of standard air motors. The top segment is preloaded, i.e. as if supplied with a pneumatic spring. Changes in the instrument air supply pressure operate the valve. The pre-load closes the valve automatically in the event of instrument air failure. The real objective in this design was not so much remote control—essential as that was—but more pointedly to eliminate as much nertia of moving parts as possible—such as pistons, etc. and yet secure the desired advantages of a diaphragm valve in the sense of the word previously discussed.

In this positioner equipped air cylinder valve we secure remote control by manual or automatic means. Manual operation calls for the use of an accurate pressure regulating valve to feed air to the instrument side of the positioner.

Automatic operation involves controlling instrument air fed to the positioner by pressure regulating, or liquid level control devices of standard design.

The decision to use air cylinder diaphragm valves has

(Continued on page 42)

Application and Maintenance Techniques for Mill Insulation

85% Magnesia and Diatomaceous Silica With Specific Reference to

By Utley W. Smith
Manager, Magnesia Insulation Manufacturers Association

Insulation, rightly considered, is as much a part of mill equipment as any digester, cooker or evaporator. Like any other equipment, insulation must be properly installed and adequately maintained, if it is to operate efficiently and economically.

The techniques used in applying and finishing the insulation and the problems that arise in maintaining it are largely determined by the properties of the materials used and the operating conditions involved.

Although insulation thickness specifications would be more properly considered under equipment design rather than maintenance, nevertheless an understanding of the factors involved in such specifications is important to an adequate insulation program.

Insulation is used in the mill, for a variety of reasons, among them being temperature control, heat conservation, worker protection and worker comfort.

Since the primary function of the insulation is heat conservation, the question as to the thickness to be used is one of economics. For many years, insulation thickness was based upon a fairly routine consideration of pipe size, equipment dimensions and operating temperatures.

Today, however, the greatly increased cost of heat generation makes a more precise determination of thickness highly desirable. The most economical thickness of insulation is that at which the sum of the annual cost of insulation and of the annual cost of the heat loss is at a minimum. Among the variables involved are hours of operation, operating temperatures, rate of amortization, cost of heat production—which is based on fuel, labor, equipment and maintenance costs—as well as cost of insulation. The Magnesia Insulation Manufacturers Association has prepared a study, recently published by the American Society of Heating & Ventilating Engineers on the rapid determination of economical thicknesses of 85% magnesia pipe insulation which takes into consideration all the variables mentioned above. A similar study has been completed on the economical thickness of block insulation, and copies will be available after publication in the near future.

When temperature control is necessary, or when it is desired to keep workroom temperatures within comfortable limits, insulation thicker than the economical thickness may be necessary. On insulated outdoor equipment, about ½ in. is added to the economical insulation thickness specifications since heat losses rise sharply with air velocity. Also, there is greater variation in ambient air temperatures as compared with indoor installations, which makes temperature control more difficult.

85% Magnesia and Diatomaceous Silica

The oldest of modern insulating materials, 85% magnesia, is used extensively on piping and equipment operating at temperatures up to about 600 F. As the name implies, the material is composed chiefly of magnesium carbonate. Asbestos fiber is added to give it the necessary reinforcing and binding qualities so that it can be molded. Its low heat conductivity is due to a low density structure composed of minute dead air cells formed by the interlocking crystals of magnesium carbonate. 85% magnesia is available in the familiar forms of semi-cylindrical and segmental pipe sections, curved and flat blocks, and as cement.

Most mill operators are acquainted with 85% magnesia as past operating temperatures have been largely under 600 F. However, modern mill practice calls for higher temperatures and introduces the problem of insulating for temperatures over 600 F.

Where such temperatures are encountered, a combination insulation is used, composed of an inner layer of diatomaceous silica insulation and an outer layer of 85% magnesia. Combination insulation provides the low heat conductivity of the 85% magnesia with the resistance to the effects of high temperatures possessed by the diatomaceous silica. The result is an efficient, long-lasting covering that requires a minimum amount of maintenance.

Diatomaceous silica is a naturally occurring material composed of microscopic fossilized plants called diatoms. Asbestos fiber is added as a binding material, as in the case of 85% magnesia. Diatomaceous silica insulation is available in the same forms, sections, segments and blocks, as 85% magnesia and it is dimensioned so that it will fit properly into the outer section of 85% magnesia. As with 85% magnesia, diatomaceous silica cement, or high temperature insulating cement, as it is sometimes called, is simply the molded product ground up into a powder.

These materials can be shipped to, and handled and stored at, the mill without excessive breakage, and without taking any special precautions in the process. They can be applied easily and rapidly, with a minimum number of tools. Standard shapes can either be sawed or cut with a knife, without cracking or crumbling, to fit the requirements of odd-shaped equipment or fittings. They have enough "give" so that they fit tightly against the contour of a surface without breaking apart.

Application Procedures

Before insulation is applied, pipe and equipment surfaces should be cleaned of scale, grease, dirt or any other debris that might prevent the insulation from fitting snugly. Loose-fitting insulation cannot give maximum protection against heat loss because air convection currents are set up around the equipment surface. Also loose insulation has a tendency to break when subject to expansion and contraction. Tight-fitting insulation is especially important on high-temperature equipment that is alternately heated and cooled, as for instance, a heated batch tank or liquor heater, and equipment that is sub-

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ject to a great deal of vibration, such as pumps, turbines, etc.

When insulation is applied on either piping or equipment, the semi-cylindrical sections, segments or blocks are butted tightly together so that heat in the form of hot air cannot escape through the cracks. In order that there may be no continuous joint from the hot surface to the air, joints in the inner and outer layer of combination insulation are staggered with respect to each other. As an added precaution, all joints in a layer are sealed with cement made of the same material as the respective layer of insulation.

On pipe bends, insulation is either formed by hand to fit the contour of the pipe, or, if the bend is too sharp, a section of pipe insulation is fitted by mitering. Each mitered piece is wired on separately to prevent it from coming loose.

On piping 3½ in. and smaller, valves, flanges and fittings are insulated entirely with cement. On piping 4 in. and larger, pipe or block insulation is used, whichever is the more suitable. As an aid in insulating such pieces, insulating cement is daubed on first and then the insulation is applied. The cement helps to keep the insulation in place while it is being wired on.

When flanged connections must be unbolted frequently, permanent type insulation is impractical. It takes time to strip off insulation and reapply new material and such a procedure is expensive. However, the answer does not lie in letting the flange go uninsulated. An 8-in. line operating at a temperature of 400 F, for instance, will lose the heat equivalent of more than a ton of coal a day for every bare flanged coupling in the line. Removable insulation solves the problem, for it can be quickly removed and replaced as often as required and without damage.

A template or wire frame of ½ in. galvanized wire mesh is built in two parts, to fit around the flange. Insulation blocks are cut to fit the shape of the frame and are firmly wired to it. Wire mesh is applied over the blocks and wired to the frame to serve as a foundation for the cement finish and also make the cover more rigid. The entire unit is covered with insulating cement, both inside and outside, and, except for the finish, is ready for use.

For vessels, such as tanks, heaters, clarifiers, etc., greater than 5 ft. in diameter, insulation is held in place with galvanized steel or other corrosion-resistant bands instead of the wiring used on piping and smaller equipment.

Insulation around manholes, nozzles, and other openings is beveled off so that bolts can be removed without disturbing the insulation.

On vertical apparatus, more than 30 ft. in height, angle bars or supports are provided to keep the insulation from slipping. The supports are welded in place at the bottom and at 15-ft. intervals for the entire height of the vessel. These supports project horizontally ½ in. less than the thickness of the insulation, and are equipped with holes to provide anchor points for the tie wires. For horizontal tanks or vessels 4 ft. in diameter and larger, similar supports are provided. In this case they are welded along horizontal center lines of cylindrical shells and along both heads of the vessel.

Finishing the Insulation

Factory-applied canvas is not heavy enough to protect the insulation on piping inside the mill. Instead, pipe insulation should be finished with an 8-oz. canvas jacket, which may be sewed on or pasted on.

Before the canvas jacket is applied the insulation is wrapped with a layer of rosin-sized paper. If the canvas is pasted on, the edges are lapped. If the canvas is sewed on, three stitches to the inch are used. The canvas jacket is generally sized and painted with lead-in-oil paint.

Pipe insulation near catwalks, stairways, hoists, mobile equipment or other points where it is subject to mechanical abuse is enclosed in a galvanized sheet iron jacket that effectively protects it from damage.

Before the paper and jacket are applied on pipe bends, the insulation is given a hard coat of asbestos cement so that a smooth, even surface is presented for the paper. Similarly, insulation on flanges, fittings and valves is covered with a ½ in. thick layer of hard-finish asbestos cement, in two coats, before the jacketing is pasted on. The layer of cement is just thick enough to make the insulation equal to that on the adjacent pipe.

The finishing of mill equipment located indoors is a rather simple procedure. Hexagonal wire mesh is applied over the insulation to provide a strong bond between the cement coat and the molded insulation surface. On large diameter equipment the wire mesh is tied to the insulation supports mentioned earlier. A ½ in. thick coat of asbestos cement is applied in two coats. The first coat is keyed through the mesh, scratched and allowed to dry before the second coat is applied. The finish or second coat is troweled on smooth.

Insulation on equipment and piping located outdoors requires protection against the effects of winds, rain, storms, etc., so that its insulating value may be unimpaired.

Pipe, flange, fitting and valve insulation is protected by a 50# to 55# asphalt-saturated asbestos roofing felt. Generous laps are provided at all edges and sealed with asphaltic lap cement. All longitudinal laps are located on the side of the pipe and turned downward so as to shed moisture. On valves, fittings and flanges too small to cover conveniently with the roofing felt, a weather-resistant plastic asphalt cement is used. The material can be troweled to a smooth, hard finsh. It is also used to seal any voids, spaces or cracks around pipe hangers, or where the weatherproof finish on the valves, flanges, or fittings borders on the adjacent pipe jacket. In other words, every precaution is taken to make the insulation as weather-resistant as possible.

In some cases, outdoor piping in the mill area runs close to the ground and the insulation is subject to abuse by traffic. In such cases the weatherproofing can be eliminated and a #26 gauge galvanized sheet steel jacket can be used instead.

Since weather conditions, type of equipment used, and operating details vary from plant to plant in different localities, a wide variety of procedure is used in insulating outdoor equipment. It is therefore impossible to discuss these insulating procedures in the limited time available.

Maintenance of Insulation

It should be emphasized that insulation is a valuable piece of plant equipment and deserves the same thorough inspection and maintenance as a recovery boiler or a digester. In some cases maintenance and repair can be carried out by an insulation contractor. In this way the mill has at its disposal a staff of engineers and workmen with long years of experience in the insulation field. Service arrangements may be made with the contractor to handle maintenance work either by routine, periodic inspection and servicing when needed, or by assignment of permanent crews to the plant if there is enough work to warrant such an arrangement.

In any event, a thorough insulation maintenance program includes the following phases:

A periodic, complete mill check-up should be made to determine whether the insulation on any flanges, fittings or equipment is damaged. A good place to check is where there has been some new equipment installed, or some operating equipment has been taken off the line for repair. Sometimes the men inadvertently damage the insulation with scaffolding, or by walking on or supporting apparatus on insulation. Some insulated surfaces may have been damaged by passing mobile equipment or dropped tools.

Damaged insulation should be cut out and the section replaced with a new one of the same shape. The new piece should be wired on securely, cracks filled with insulating cement, and the jacketing replaced.

Some workmen have a habit of ripping insulation off flanged fittings even though removable insulation is supplied. Naturally the insulation should be replaced. If this happens too often it may be worthwhile to paint the word "removable" on the insulation jacket.

Outdoor insulation requires careful inspection, especially after bad weather. Generally all that is required is that a section of the weatherproofing be replaced or resealed. It is always a good policy, however, to check the insulation underneath for damage, and replace it, if necessary.

Excessive vibration of equipment due to bolts or tie rods that have become loose may cause the insulation to loosen, with subsequent decrease in insulating efficiency. The vibration should be eliminated if possible, and the insulation removed, reapplied and tightened. The joints should be pointed up with cement and the protective covering replaced.

Another place to check is where scorched spots appear on the canvas. This usually indicates inadequate insulation. Sometimes it indicates that a flanged connection has opened up slightly, due to a worn gasket, or that the insulation itself has opened up or has been damaged. The necessary steps should be taken to correct the situation and the scorched canvas replaced with new material.

Another phase in the maintenance program is a review of insulation thicknesses. Changes in operation or type of fuel used might warrant application of thicker insulation.

Mill equipment should be checked for uninsulated equipment, especially when a new unit is installed.

Operational difficulties should be checked for any relation to insulation. Temperature control difficulties, excessive steam condensation, or uncomfortably hot working conditions all are affected by insulation.

Although the maintenance program has been described rather extensively, actually if the materials described here are applied properly and protected adequately, insulation maintenance work will be of a very minor nature, once the trouble spots are corrected.

Application of Remote Control Devices to Diaphragm Valves

(Continued from page 39)

hinged in some cases on the fact they can act as relief valves, valve line pressures acting on the diaphragm exert an upward pressure. If such pressure exceeds the impresed air load, the valve opens. In mentioning water cylinders for remote control operations, we believe the discussion will have covered everything we need, they can be used. Standard types are available. We do not favor them mainly because their hard, uncompromising action beats the daylights out of the diaphragm. Air offers a most desirable cushioning effect. There are other reasons for our preference. Air is flexible—there are no problems of messy leakage—filling the line—eliminating air binding, etc. If there are leaks, speeding up the compressor may burn out the motor but it could save a process. Speeding up the water pump would be like pumping your auto brake pedal with no hydraulic fluid in the line.

To sum it up, this diaphragm valve falls into its proper place like any other device. You use it if it solves more problems than it creates. We apply remote controls when and only when we are assured that its control function gives a desired standard of performance.

EQUIPMENT AND SUPPLIES

Crane's New 100-Pound Brass Gate Valves

Crane Company announces a new line of 100-pound brass gate valves, furnished in two types, the No. 410 screwed-end valve in sizes ¼-inch to 2-inch, and the No. 1320 solder-joint valve in sizes ⅜-inch to 2-inch. These are non-rising-stem valves and are intended to replace Crane No. 449½ and 1319, which are being discontinued.

The body design of the new valves is said to be an innovation in low-pressure valves. The upper portion of the body is cylindrical in shape, similar to the design that has been used only in steel valves for the highest pressures, which combines maximum strength with light weight. The cylindrical shape of the body, in addition to resisting pressure reinforces the seats against the wedging action of the disc, thus safeguarding against distortion of the body when the valve is being seated.

The ends of the solder-joint design are made to fit closely over hard copper tubing so that the solder flows into the joint by capillary action. The joint is soldered by what is known as "end feeding," the solder being fed into the joint from the outer end of the socket.

The screwed valves are recommended for use on low-pressure condensate lines, exhaust steam lines and low-pressure process steam lines. They also are intended for use in water lines, steam and hot-water heating lines, gas lines and fuel-oil lines. The solder-joint valves are suitable for the same services, except that they are not recommended for gas or fuel oil because of the fire hazard involved in working with solder.

For details and prices write to Crane Co., 836 South Michigan Avenue, Chicago 5.

New Unbreakable Acid Pail

A new five-gallon pail made of perforated steel with welded seams and covered inside and out with rubber permanently wedded through the perforations is designed for safer handling of acids and all corrosive solutions. For details and prices write to Automotive Rubber Co., Inc., 8601 Epworth Boulevard, Detroit, Mich.

Northwest Flood Damage

(Continued from page 7)

curtailment from that angle, but up to the present time this hasn't materialized.

Fibreboard Prod. Inc.,
Port Angeles Div.
Port Angeles, Wash.

No flood condition on Olympic Peninsula that caused any interruption of production. Rail shipments in our out of Port Angeles held up due to washout for this week. Expect to be normal by Sunday. (Ed. Note—June 6).

Hawley Pulp and Paper Co.
Oregon City, Ore.

All paper mill machines operating capacity. High water affecting only groundwood production account of low head for water power. No flood damage. Water slightly receding for the present.

Inland Empire Paper Co.
Spokane, Wash.

Fortunately, no flood damage in this immediate area.

Pacific Mills, Ltd.
Ocean Falls, B. C.

We have had no floods of any kind at Ocean Falls, consequently nothing along these lines to report.

Pacific Paperboard Co.
Longview, Wash.

No damage operating at capacity and construction on news plant proceeding on schedule.

Pacific Roofing Co.
Portland, Ore.

Flood receding have closed plant for two weeks only. No damage done. Appreciate your interest.

J. Petrie Pulp Divn.
Bloedel Stewart & Welch.
Port Alberni, B. C.

Flood conditions at present are confined entirely to the mainland and have not affected Vancouver Island. Other than shortage of rail cars, floods in Fraser Valley have not affected us in any way nor do we expect them to do so.

Powell River Co. Ltd.
Powell River, B. C.

No floods at all in this area.

Puget Sound Pulp & Timber Co.
Bellingham, Wash.

No floods in Puget Sound area. All mills operating fully. Thanks for your interest.

Puget Sound Pulp & Timber Co.,
Paperboard Division.
Bellingham, Wash.

No damage to our property through floods or interruption of production as we are not in flood area.

Rayonier Inc.
Olympia, Wash.

Shelton Division of Rayonier, Inc., unaffected by flood waters.

St. Helens Pulp and Paper Co.
St. Helens, Ore.

Flood damage will be high. Cannot give estimate at present. Water still up and further rise expected. Production has been stopped since Saturday, May 29.

St. Regis Paper Co.
Tacoma, Wash.

We have suffered no damage of any consequence from flood as the high waters did not affect this particular district.

Sidney Roofing & Paper Co., Ltd.
Victoria, B. C.

Floods confined to mainland. Our production not affected.

Simpson Logging Co.
Shelton, Wash.

Outside flood area. Shipment products might be slightly affected.

Sorg Pulp Co., Ltd.
Port Mellon, B. C.

No flood damage to pulp mill or townsite. Are far enough away from Fraser and Columbia to be out of danger. Our Rainy River not flooding. Production not curtailed. Storing in millyard under tarps because no freight is moving out this vicinity due washouts on Fraser and Columbia.

Soundview Pulp Co.
Everett, Wash.

The floods have not damaged our property or had any adverse effect on our production.

Westminister Paper Co.
New Westminister, B. C.

Floods so far have not damaged our property nor interrupted production. Serious disruption may occur due to inability to ship due to washouts on Canadian railways. Mill kept clear of water by means of sandbagging basement doorways and pumping out paper machine effluent.

West Tacoma Newsprint Co.,
Steilacoom, Wash.

Suffered no damage because of flood conditions. Flood waters approximately 100 miles south.

Weyerhaeuser Timber Co.
Longview, Wash.

Floods have not damaged our property but have temporarily halted production because of the inability to get logs and fuel to the mill. It will be impossible to start mill until flood recedes.

Mills to which the telegraphic inquiry was addressed and which did not reply included the following in Washtington: Bellingham Paper Products Co., and Pacific Coast Paper Mills, Bellingham; Grays Harbor Pulp & Paper Co., Hoquiam; Longview Fibre Co., Rayonier, Inc., Port Angeles; Cellulose Products Laboratory, and Standard Carton Co., Tacoma; and Columbia Paper Mills, Vancouver, Wash.

In Oregon: Spaulding Pulp & Paper Co., Newberg; Fir-Tex Insulating Board Co., St. Helens.

In Vancouver, B. C.: British Columbia Pulp & Paper Co., Ltd., Woodfibre, B. C.

Failure to hear from the mills named in the preceding three paragraphs may be attributed conjecturally to the probability that they were beyond telegraphic communication because of the high water, that they may have been too busy fighting the flood to answer inquiries, or that they felt it expedient at the moment to make no comment.

New York office of Rayonier, Inc., told PAPER TRADE JOURNAL: "The mills in the state of Washington have not been affected by the flood because of their location, and operations are normal. Can't guarantee that the railroads will get through, but the mills themselves have not been affected at all by the floods."

Press reports from the Northwest included the following:

Down the Columbia River at St. Helens, Ore., all industry is practically at a standstill, and much damage reported. The only bright spot in the picture at St. Helens is the fact that the Fir Tex Insulating Board Co., now closed for maintenance, expects to return to operation Thursday, if flood waters go no higher.

Closed at St. Helens are the Pope & Talbot Sawmill, employing 350; Pope & Talbot creosote plant, employing 150; Bemis Paper Bag Co., employing 175; and the St. Helens Pulp & Paper Co., employing about 550.

Portland, Ore., on June 2, reported the Crown-Zellerbach Corp. division at Camas, Wash., is closed and apparently considerably damaged since it is on the Columbia. Officials were making an aerial survey to estimate the damage. This plant employs 2,500.

The same company's Western Wax Paper Co. division in North Portland is closed and damaged, with water in the plant chest-high.

Powell River's Alton Resigns

POWELL RIVER, B. C.—W. J. Alton, who since 1940 has been assistant to the president manager of the Powell River Co., has resigned his position to open his own business.

Mr. Alton is succeeded by V. E. Forbes, who was formerly in the company's townsite department. Mr. Forbes in turn, has been succeeded by Charles McPhalen, formerly with the mechanical department.

GPO Bids

(Continued from page 7)

Walker, Goulard, Plehn Co. ..... .10858c
Paper Corp. of U. S. ..... .1046c

No. 8—225,000 lbs., 25x38—70; rolls, 19 and 38 ins. wide, 36 inches in diameter (3-inch fiber cores).

Mudge Paper Co. (100,000 lbs. only). ..... .1082c
Mead Sales Co. ..... .1072c
Paper Corp. of America ..... .159c
Wilcox, Walker Furlong Paper Co. .10185c
Walker, Goulard, Plehn Co. ..... .10858c
Paper Corp. of U. S. ..... .1046c

No. 9—350,000 lbs., 25x38—70; rolls, 24, 36, and 48 ins. wide, 36 inches in diameter (3-inch fiber cores).

Mudge Paper Co. (100,000 lbs. only). ..... .1082c
Mead Sales Co. ..... .1072c
Paper Corp. of America ..... .159c
Wilcox, Walker Furlong Paper Co. .10185c
Walker, Goulard, Plehn Co. ..... .10858c
Paper Corp. of U. S. ..... .1071c

Offset Book

No. 18—150,000 lbs., 25x38—80; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Central Ohio Paper Co. (150,000 lbs. either lots 18 or 19). ..... .1339c
Paper Corp. of America ..... .1545c
Walker, Goulard, Plehn Co. ..... .1243c
Howard Paper Mills (Aetna Paper Co. Div.) ..... .1457c
R. P. Andrews Paper Co. ..... .1417c
Paper Corp. of U. S. ..... .125c

No. 19—1,350,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins., the grain to run lengthwise of the sheet.

Whitaker Paper Co. ..... .1068c
Central Ohio Paper Co. (150,000 lbs. lots 18 or 19.) ..... .1175c
Paper Corp. of America ..... .151c
Walker, Goulard, Plehn Co. ..... .1449c
Howard Paper Mills (Aetna Paper Co. Div. 100,000 lbs. only.) ... .1289c
Stanford Paper Co. ..... .1252c
R. P. Andrews Paper Co. ..... .1243c
Paper Corp. of U. S. (400,000 lbs. only.) ..... .1135c
Paper Corp. of U. S. (200,000 lbs. only.) ..... .1175c

Offset Poster

No. 20—200,000 lbs., 25x38—120; flat, cut any size, min. width 24 ins., max. width 48 ins., the grain to run lengthwise of the sheet.

Bulkley Dunton Co., Inc. ..... .1278c
Paper Corp. of America ..... .1495c
Wilcox Walker Furlong Paper Co. .163c
Walker, Goulard, Plehn Co. ..... .1499c
Howard Paper Mills (Aetna Paper Co. Div.) ..... .119c
Stanford Paper Co. ..... .1165c
R. P. Andrews Paper Co. ..... .1157c
Paper Corp. of U. S. ..... .1194c

Antique Book

No. 21—100,000 lbs., 25x38—90; flat, cut 32x42, 33x43, and 38x50 ins.

Cauthorne Paper Co. ..... .115c
Mead Sales Co. ..... .104c
Bulkley Dunton Co., Inc. ..... .1089c
Paper Corp. of America ..... .155c
Wilcox Walker Furlong Paper Co. .172c
Walker, Goulard, Plehn Co. ..... .1045c
Walker, Goulard, Plehn Co. ..... .1146c
R. P. Andrews Paper Co. ..... .0882c
Paper Corp. of U. S. ..... .1125c

Lightweight Machine-Finish Book

No. 23—40,000 lbs., 25x38—60; flat, cut 28x38 and 38x48 ins.

Walker, Goulard, Plehn Co. ..... .1412c
Paper Corp. of U. S. ..... .1325c

50% Lightweight Machine-Finish Book

No. 24—50,000 lbs., 25x38—60; flat, cut 30x43 and 38x48 ins. Min. order 10,000 lbs.

Whitaker Paper Co. ..... .195c
John W. McNeil, Inc. ..... .1749c
Walker, Goulard, Plehn Co. ..... .2074c
Paper Corp. of U. S. ..... .1815c

50% Antique Book

No. 26—40,000 lbs., 25x38—80; flat, cut 32x48 and 38x48 ins.

Whitaker Paper Co. ..... .1735c
Mudge Paper Co. ..... .2244c
Old Dominion Paper Co. ..... .21649c
John W. McNeil, Inc. ..... .1744c
Central Ohio Paper Co. ..... .19c
Marquette Paper Corp. ..... .214c
Birmingham & Prosser Co. ..... .216c
Wilcox Walker Furlong Paper Co. .246c
Walker, Goulard, Plehn Co. ..... .1899c
Howard Paper Mills (Aetna Div.) .1873c
Paper Corp. of U. S. ..... .1795c

No. 27—20,000 lbs., 25x38—80. Shall be suitable for writing on with ink. Flat, cut 22¾x31 ins.

Whitaker Paper Co. ..... .1745c
Mudge Paper Co. ..... .2307c
Old Dominion Paper Co. ..... .21649c
Old Dominion Paper Co. ..... .22299c
John W. McNeil, Inc. ..... .1758c
Central Ohio Paper Co. ..... .19c
Marquette Paper Corp. ..... .216c
Birmingham & Prosser Co. ..... .216c
Wilcox Walker Furlong Paper Co. .246c
Walker, Goulard, Plehn Co. ..... .1924c
Howard Paper Mills (Aetna Div.) .1893c
Paper Corp. of U. S. ..... .1795c

Supercalendered Book

No. 33—250,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins.

Mead Sales Co. ..... .1134c
Walker, Goulard, Plehn Co. ..... .1199c

No. 34—50,000 lbs., 25x38—90; rolls, 28½ and 38 ins. wide, 36 inches in diameter (3-inch fiber cores).

Mead Sales Co. ..... .1055c
Walker, Goulard, Plehn So. ..... .1078c
R. P. Andrews Paper Co. ..... .0885c

Coated Book

No. 35—350,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins.

Mudge Paper Co. (100,000 lbs. only.) ..... .119c
Mead Sales Co. ..... .1107c
Barton, Duer & Koch Paper Co. .. .113c

No. 37—40,000 lbs., 25x38—100; rolls, 28½ and 38 ins wide, 36 inches in diameter (3-inch fiber cores).

Mead Sales Co. ..... .1005c
Barton, Duer & Koch Paper Co. .. .1027c

No. 40—150,000 lbs., 25x38—140; flat, cut 32x42, 38x48, 39x50, and 41x52 ins.; the grain to run lengthwise of the sheet.

Mead Sales Co. ..... .1097c
Consolidated Water Power & Paper Co. ..... .10986c

Litho Coated Book

No. 41—10,000 lbs., 25x38—140; flat, cut 32x42, 38x48, 39x50, and 41x52 ins.; the grain to run lengthwise of the sheet.

Birmingham & Prosser Co. ..... .14915c
Walker, Goulard, Plehn Co. ..... .133c

Chemical Wood Mimeograph, White and Colored

No. 44—350,000 lbs., No. 40. Flat, cut 28½x34½, 32½x42½, and 38 x 48½ ins. Grain: Size 28½x34½ ins, to run the 28½ inch way; size, 32½x42½ to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way.

Whitaker Paper Co. ..... .1195c
Mudge Paper Co. ..... .1334c
Old Dominion Paper Co. ..... .13147c
Marquette Paper Corp. ..... .13c
Paper Corp. of America ..... .1495c
Birmingham & Prosser Co. ..... .131c
Walker, Goulard, Plehn Co. ..... .1396c
Barton, Duer & Koch Paper Co. .. .1165c
R. P. Andrews Paper Co. ..... .1019c
Paper Corp. of U. S. (100,000 lbs. only.) ..... .117c

No. 45—40,000 lbs., blue, buff, green, pink, and yellow, No. 40. Flat, cut 32½x42½, and 38x48½ ins. Grain: Size 32½x42½ to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way. Min. order, one color, 10,000 lbs.

Mudge Paper Co. ..... .1449c
Cauthorne Paper Co. ..... .1447c
Old Dominion Paper Co. ..... .13948c
Marquette Paper Corp. ..... .1395c
Paper Corp. of America ..... .1545c
Birmingham & Prosser Co. ..... .1385c

25% Mimeograph

No. 46—200,000 lbs., No. 40. Flat, cut 28½x34½, 32½x42½, 34½x44, 38x48½, and 40½x42½ ins. Grain: Size 28½x34½ ins. to run the 28½ inch way; sizes 32½x42½ and 40½x42½ ins. to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way.

Mudge Paper Co. ..... .1849c
Old Dominion Paper Co. ..... .143c
Marquette Paper Corp. ..... .179c
Birmingham & Prosser Co. ..... .1815c
Wilcox, Walker Furlong Paper Co. .179c
Howard Paper Mills (Aetna Div.) .1372c
Barton, Duer & Koch Paper Co. .. .1397c
Paper Corp. of U. S. (100,000 lbs. only.) ..... .1459c

Duplicator Copy Paper, Liquid Process, White and Colored

No. 48—20,000 lbs., pink, yellow, green, and blue, No/ 40; flat, cut 32x42 and 34x44 ins.; the grain to run lengthwise of the sheet.

Mudge Paper Co. ..... .1533c
Old Dominion Paper Co. ..... .14698c
Paper Corp. of America ..... .157c
Birmingham & Prosser Co. ..... .1385c
Stanford Paper Co. ..... .168c

Blue USMO Safety Writing

No. 49—240,000 lbs., No. 32. Rolls, 22 ins. wide, 24 ins. in diameter (3-inch fiber cores).

D. L. Ward Co. (120,000 lbs. only.) ..... .1924c
Walker, Goulard, Plehn Co. (100,000 lbs. only.) ..... .1944c
R. P. Andrews Paper Co. ..... .197c

Chemical Wood Writing, White and Colored

No. 51—50,000 lbs., white, No. 26. Flat, cut any size, min. width 21 ins., max. width 48 ins.

Bulkley Dunton Co., Inc. ..... .1495c
Walker, Goulard, Plehn Co. ..... .1725c
Frank Parsons Paper Co. ..... .1475c
Paper Corp. of U. S. ..... .1449c

No. 52—800,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Cauthorne Paper Co. (100,000 lbs. only—lots 52 & 54.) ..... .1342c
Cauthorne Paper Co. ..... .1435c
Bulkley Dunton Co., Inc. ..... .1107c
Bulkley Dunton Co., Inc. ..... .1318c

BECKETT PAPER CO. MARKS HUNDREDTH ANNIVERSARY

COMMEMORATING the 100th Anniversary of the Beckett Paper Co., Hamilton, Ohio, industrialists and other business interests feted the firm at a testimonial dinner on June 8, with more than 400 persons in attendance. . . . Principal speaker was Reuben D. Robertson, president of Champion Paper & Fibre Co. . . . Frederick H. Chatfield, manager of the Pittsburgh division of the Chatfield & Woods Co., a great grandson of the first Beckett customer, also spoke, as did Jerome Zettler, a Beckett 20-year man. . . . The Hamilton Chamber of Commerce presented a bronze plaque which was received on behalf of the company, by Mrs. Mary Millikin Beckett, widow of the late Thomas Beckett. . . . In the picture, left to right, are: Guy H. Beckett, Cyrus J. Fitton, Mrs. Beckett, William Beckett, Dan M. Beckett.

Marquette Paper Corp. (400,000 lbs. only.) .. .. .1305c
Paper Corp. of America ..... .1545c
Walker, Goulard, Plehn Co. ..... .159c
R. P. Andrews Paper Co. ..... .1107c
Paper Corp. of U. S. (200,000 lbs. only.) ..... .1355c

No. 53—1,100,000 lbs., white, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.

Whitaker Paper Co. (400,000 lbs. only.) ..... .1195c
Cauthorne Paper Co. ..... .1365c
Bulkley Dunton Co., Inc. ..... .1195c
Bulkley Dunton Co., Inc. ..... .1367c
Paper Corp. of America ..... .1495c
D. L. Ward Co. (400,000 lbs. only.) .1284c
Walker, Goulard, Plehn Co. ..... .1544c
Barton, Duer & Koch Paper Co. (400,000 lbs. only.) ..... .1195c
R. P. Andrews Paper Co. (200,000 lbs. only.) ..... .1049c
Paper Corp. of U. S. (400,000 lbs. only.) .. .. .1346c

No. 54—250,000 lbs., white, No. 32. Rolls, min. width 16 ins., 36 ins. in diameter, max. width 48 ins. (3-inch fiber cores).

Whitaker Paper Co. ..... .1166c
Cauthorne Paper Co. (400,000 lbs. only.) ..... .1234c
Bulkley Dunton Co., Inc. ..... .1005c
Paper Corp. of America ..... .147c
Walker, Goulard, Plehn Co. ..... .1412c
Barton, Duer & Koch Paper Co. .. .115c
R. P. Andrews Paper Co. ..... .105c
Paper Corp. of U. S. ..... .125c

No. 55—50,000 lbs., white, No. 40; rolls, min. width, 16 ins., 36 ins. in diameter, max. width, 48 ins. (3-inch fiber cores).

Bulkley Dunton Co., Inc. ..... .0946c
Paper Corp. of America ..... .1425c
Walker, Goulard, Plehn Co. ..... .1399c
Barton, Duer & Koch Paper Co. .. .109c
R. P. Andrews Paper Co. ..... .0946c
Paper Corp. of U. S. ..... .1241c

No. 57—130,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow; No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins. Minimum order, one color, 10,000 lbs.

Bulkley Dunton Co., Inc. ..... .1445c
Paper Corp. of America ..... .1595c
Walker, Goulard, Plehn Co. ..... .1444c
Paper Corp. of U. S. ..... .1338c

No. 58—90,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins. Min. order, one color, 10,000 lbs.

Paper Corp. of America ..... .1545c
Walker, Goulard, Plehn Co. ..... .1404c
Paper Corp. of U. S. ..... .1278c

50% Lithograph-Finish Map

No. 71—20,000 lbs., No. 40; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Whitaker Paper Co. ..... .2165c
Old Dominion Paper Co. ..... .21249c
Howard Paper Mills (Aetna Div.) .1846c
Stanford Paper Co. ..... .1752c
Barton, Duer & Koch Paper Co. .. .193c
Paper Corp. of U. S. .. .. .206c

High Wet Strength Map

No. 78—445,000 lbs., No. 48; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Whitaker Paper Co. (100,000 lbs. only.) ..... .1906c
Mudge Paper Co. (100,000 lbs. only.) ..... .18999c
Mudge Paper Co. (100,000 lbs. only.) ..... .1929c
Cauthorne Paper Co. (150,000 lbs. only.) ..... .1792c
Cauthorne Paper Co. (150,000 lbs. only.) ..... .1822c
Cauthorne Paper Co. (145,000 lbs. only.) ..... .1847c
Birmingham & Prosser Co. (100,000 lbs. only.) ..... .1909c
Birmingham & Prosser Co. (100,000 lbs. only.) ..... .1949c
Barton, Duer & Koch Paper Co. (250,000 lbs. only.) ..... .1879c
Paper Corp. of U. S. (50,000 lbs. only.) ..... .193c
Paper Corp. of U. S. (100,000 lbs. only.) ..... .1959c

50% White Chart, Lithograph-Finish

No. 79—40,000 lbs., No. 72; flat, cut any size, min. width 22 ins., max. width 46 ins.; the grain to run lengthwise of the sheet unless otherwise specified.

Franklin Research Co. ..... .2098c
Stanford Paper Co. ..... .1949c
Barton, Duer & Koch Paper Co. .. .2129c
Paper Corp. of U. S. ..... .2214c

Chemical Wood Manifold, White and Colored

No. 83—60,000 lbs., white, No. 18; flat, cut 21x32, 28x34, 32x42, and 34x44 ins.

Old Dominion Paper Co. ..... .17688c
Walker, Goulard, Plehn Co. ..... .1723c
Frank Parsons Paper Co. ..... .1777c

50% Manifold, White & Colored

No. 86—40,000 lbs., white, No. 14; flat, cut 32x42 ins. Min. order, 5,000 lbs.

Whitaker Paper Co. ..... .251c
Mudge Paper Co. ..... .3275c
Marquette Paper Corp. ..... .30c
Walker, Goulard, Plehn Co. ..... .3067c
Stanford Paper Co. ..... .2676c
Barton, Duer & Koch Paper Co. ... .297c
R. P. Andrews Paper Co. ..... .2895c

No. 87—40,000 lbs., white, No. 18; flat, cut 21x32; 28x34; 32x42 and 34x44 ins.

Whitaker Paper Co. ..... .251c
Old Dominion Paper Co. ..... .22728c
Butler Co. ..... .2547c
Walker, Goulard, Plehn Co. ..... .2567c
Stanford Paper Co. ..... .2525c
Barton, Duer & Koch Paper Co. .. .2574c
R. P. Andrews Paper Co. ..... .2595c
Paper Corp. of U. S. ..... .279c

No. 89—10,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 18; flat, cut 28x34 and 34x44 ins. Min. order, one color, 5,000 lbs.

Whitaker Paper Co. ..... .26c
Old Dominion Paper Co. ..... .24948c

(Continued on page 46)

GPO Bids

(Continued from page 45)

Butler Co.	.2589c
Walker, Goulard, Plehn Co.	.2597c
Barton, Duer & Koch Paper Co.	.2725c
R. P. Andrews Paper Co.	.2645c
Paper Corp. of U. S.	.287c

Chemical Wood Bond, White and Colored

No. 102—240,000 lbs., No. 40; flat, cut any size, min. width 21 ins., max. width 38 ins.

Mudge Paper Co.	.1374c
Old Dominion Paper Co.	.13147c
Bulkley Dunton Co., Inc.	.14c
Central Ohio Paper Co.	.1315c
Marquette Paper Corp.	.13c
Paper Corp. of America	.1495c
Birmingham & Prosser Co.	.131c
Walker, Goulard, Plehn Co.	.1375c
Paper Corp. of U. S.	.134c

25% Bond, White and Colored

No. 106—50,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Whitaker Paper Co.	.1695c
Old Dominion Paper Co.	.18878c
Bulkley Dunton Co., Inc.	.1709c
Butler Co.	.16415c
Birmingham & Prosser Co.	.188c
Walker, Goulard, Plehn Co.	.1749c
Howard Paper Mills (Aetna Div.)	.1669c
Barton, Duer & Koch Paper Co.	.1683c
R. P. Andrews Paper Co.	.1877c

No. 107—50,000 lbs., No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Whitaker Paper Co.	.1695c
Old Dominion Paper Co.	.18878c
Bulkley Dunton Co., Inc.	.1709c
Birmingham & Prosser Co.	.16415c
Walker, Goulard, Plehn Co.	.1749c
Howard Paper Mills (Aetna Div.)	.1669c
Barton, Duer & Koch Paper Co.	.1683c
R. P. Andrews Paper Co.	.1877c

No. 108—40,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Whitaker Paper Co.	.1711c
Mudge Paper Co.	.16415c
Old Dominion Paper Co.	.18878c
Birmingham & Prosser Co.	.188c
Walker, Goulard, Plehn Co.	.1749c
Howard Paper Mills (Aetna Div.)	.1669c
Barton, Duer & Koch Paper Co.	.1683c
R. P. Andrews Paper Co.	.1877c

No. 109—240,000 lbs., No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.

Whitaker Paper Co.	.1611c
Graham Paper Co. (100,000 lbs. only.)	.1548c
Old Dominion Paper Co.	.178188c
Bulkley Dunton Co.	.1636c
Butler Co.	.1611c
Birmingham & Prosser Co.	.178c
Walker, Goulard, Plehn Co.	.1661c
Howard Paper Mills (Aetna Div.)	.1602c
R. P. Andrews Paper Co.	.1799c
Frank Parsons Paper Co. (140,000 lbs. only.)	.1545c

No. 114—20,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.

Birmingham & Prosser Co.	.1681c
Walker, Goulard, Plehn Co.	.1734c
Howard Paper Mills (Aetna Div.)	.1724c

100% White Bond

No. 130—40,000 lbs., No. 40; flat, cut any size, min. width 16 ins., max. width 38 ins. Min. order, 2,000 lbs.

Mudge Paper Co.	.2959c
Old Dominion Paper Co.	.32828c
Bulkley Dunton Co., Inc.	.3105c
Birmingham & Prosser Co.	.328c
Walker, Goulard, Plehn Co.	.3755c
Barton, Duer & Koch Paper Co.	.3064c
R. P. Andrews Paper Co.	.3188c

Chemical Wood White Ledger

No. 151—20,000 lbs., No. 64; flat, cut any size, min. width 17 ins., max. width 48 ins.

Mudge Paper Co.	.1533c
Old Dominion Paper Co.	.14398c
Bulkley Dunton Co., Inc.	.14c
Marquette Paper Corp.	.1365c
Paper Corp. of America	.149c
Birmingham & Prosser Co.	.1355c
Walker, Goulard, Plehn Co.	.1449c

25% Ledger, White and Colored

No. 154—50,000 lbs., white, No. 48; flat, cut 28x34, 32x42, 34x44, and 38x48 ins. Min. order, 5,000 lbs.

Old Dominion Paper Co.	.18878c
Birmingham & Prosser Co.	.188c
Walker, Goulard, Plehn Co.	.1624c
Howard Paper Mills (Aetna Div.)	.1669c
Stanford Paper Co.	.1661c
Barton, Duer & Koch Paper Co.	.1718c
Paper Corp. of U. S.	.1873c

No. 155—40,000 lbs., white, No. 64; flat, cut 28x34, 32x42, 34x44 and 38x48 ins. Min. order, 5,000 lbs.

Old Dominion Paper Co.	.18878c
Bulkley Dunton Co., Inc.	.1624c
Birmingham & Prosser Co.	.1643c
Walker, Goulard, Plehn Co.	.1749c
Howard Paper Mills (Aetna Div.)	.1669c
Barton, Duer & Koch Paper Co.	.1718c
Paper Corp. of U. S.	.1873c

No. 158—20,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 88; flat, cut 34x44 ins. Min. order, one color, 5,000 lbs.

Bulkley Dunton Co., Inc.	.1785c
Walker, Goulard, Plehn Co.	.1824c
Howard Paper Mills (Aetna Div.)	.1869c

Chemical Wood, White and Colored Index

No. 182—100,000 lbs., white, 25½x30½—220; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, 10,000 lbs.

Whitaker Paper Co.	.1081c
Mudge Paper Co.	.1288c
Old Dominion Paper Co.	.12608c
Marquette Paper Co.	.124c
Birmingham & Prosser Co.	.125c
Walker, Goulard, Plehn Co.	.1297c
Barton, Duer & Koch Paper Co.	.1345c
Paper Corp. of U. S.	.1375c

50% Index, White and Colored

No. 188—100,000 lbs., white, 25½x30½—220; flat, cut 32x42, and 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, 10,000 lbs.

Whitaker Paper Co.	.182c
Mudge Paper Co.	.1992c
Old Dominion Paper Co.	.21494c
Bulkley Dunton Co., Inc.	.2053c
Marquette Paper Co.	.2125c
Birmingham & Prosser Co.	.2145c
Walker, Goulard, Plehn Co.	.1845c
Howard Paper Mills (Aetna Div.)	.1738c
Barton, Duer & Koch Paper Co.	.1887c
R. P. Andrews Paper Co.	.1839c
Frank Parsons Paper Co.	.1935c
Paper Corp. of U. S.	.198c

No. 191—80,000 lbs., blue, buff, cherry, fawn, green, pink, salmon, and yellow; 25½x30½—220; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, 5,000 lbs.

Whitaker Paper Co. (Minimum order 10,000 lbs.)	.195c
Bulkley Dunton Co., Inc.	.1925c
Walker, Goulard, Plehn Co.	.192c
Howard Paper Mills (Aetna Div.)	.1838c
Barton, Duer & Koch Paper Co.	.1937c
R. P. Andrews Paper Co.	.1889c
Paper Corp. of U. S.	.204c

100% White Index

No. 196—30,000 lbs., 25½x30½—250; flat, cut 20¼x30 ins.

Old Dominion Paper Co.	.41149c
Bulkley Dunton Co., Inc.	.3069c
Walker, Goulard, Plehn Co.	.29c
Barton, Duer & Koch Paper Co.	.304c
R. P. Andrews Paper Co.	.3094c

Coated, Cover, White and Colored

No. 200—20,000 lbs., white, 20x26—120; flat, cut 26½x41, and 34x44 ins.; the grain to run lengthwise of the sheet. Min. order, 5,000 lbs.

Antique-Finish Cover, White and Colored

No. 203—30,000 lbs., 20x26—100; blue, buff, dawn, quaker, drab, terra cotta, gray, brown, green, gobelin blue, granite, tea, and yellow; flat, cut 25¼x39 ins., with projecting colored-paper marker between each 500 sheets. Min. order, one color, 5,000 lbs.

Whitaker Paper Co.	.1304c
Old Dominion Paper Co.	.13848c
Bulkley Dunton Co., Inc.	.1324c
Central Ohio Paper Co.	.1353c
Paper Corp. of America	.152c
Birmingham & Prosser Co.	.13c
R. P. Andrews Paper Co.	.1319c
Paper Corp. of U. S.	.1304c

50% Laid Cover, Colored

No. 206—20,000 lbs., blue, cream, white, gray, and green; 20x26—130; flat, cut 25¼x39 and 28x41 ins., with projecting colored-paper marker between each 500 sheets. Min. order, one color, 2,000 lbs.

Bulkley Dunton Co., Inc.	.1948c
Wilcox Walker Furlong Paper Co.	.21c
Wilcox Walker Furlong Paper Co.	.218c
R. P. Andrews Paper Co.	.1744c
Paper Corp. of U. S.	.1988c

Wood Manila

No. 208—60,000 lbs., 24x36—80; flat, cut 25x38, and 32x42 ins., with projecting colored-paper marker between each 500 sheets.

Walker, Goulard, Plehn Co.	.0909c
Walker, Goulard, Plehn Co.	.0939c
Frank Parsons Paper Co.	.085c

No. 210—80,000 lbs., 24x36—80; rolls, 21 ins. wide (3-inch fiber cores).

Walker, Goulard, Plehn Co.	.0833c

Chemical Wood Manila

No. 213—20,000 lbs., 24x36—140; flat, cut any size. Min. order, 5,000 lbs.

No. 2 Kraft

No. 218—40,000 lbs., 24x36—80 to 160; flat, cut any size in wrapped bundles.

No. 219—40,000 lbs., 24x36—80 to 160; cut any size, folded (25 sheets per fold), in wrapped bundles.

White Gummed

No. 252—100,000 sheets, No. 40; flat, cut 22x34 ins. Min. order 25,00 sheets.

Whitaker Paper Co. (per M sheets.)	$21.95
Graham Paper Co. (per M sheets.)	$22.44
Old Dominion Paper Co. (per M sheets.)	$22.299
Bulkley Dunton Co., Inc. (per Ream.)	$11.716

Butler Co. (per M sheets.) $22.89
Swigart Paper Co. (per M sheets.) $22.45
Stanford Paper Co. (per M sheets.) $22.29
R. P. Andrews Paper Co. (per M sheets.) $21.92
Paper Corp. of U. S. (per M sheets.) $22.45

Wood Cardboard, Colored

No. 306—50,000 lbs., buff, 22½x28½—150; rolls, 20 ins. wide (3-inch fiber cores).

Bulkley Dunton Co., Inc. ..... .1260c
Walker, Goulard, Plehn Co. ..... .1249c
Barton, Duer & Koch Paper Co. .. .1175c

No. 307—40,00 lbs., 22½x28½—150; flat, cut 32x42 ins.

Walker, Goulard, Plehn Co. ..... .1424c
Barton, Duer & Koch Paper Co. .. .13c

Chemical Wood Tan Board

No. 310—40,000 lbs., 22½x28½—200; flat, cut 25x38, 28x38, and 34x44 ins.

Bulkley Dunton Co., Inc. ..... .144c
R. P. Andrews Paper Co. ..... .1519c
Paper Corp. of U. S. ..... .1435c

United States Postal Card Paper

No. 325—3,800,000 lbs., 22½x28½—188; rolls, 33 ins. wide, 36 ins. in diameter (6-inch iron or metal capped returnable fiber cores).

Whitaker Paper Co. (Total tonnage 3,800,000 lbs. lots 325 & 326.) ..... .0842c
Mudge Paper Co. (400,000 lbs. lots 325 & 326.) ..... .1192c
Old Dominion Paper Co. (400,000 lbs. lots 325 & 326.) ..... .114198c
Mead Sales Co. (400,000 lbs. lots 325 & 326.) ..... .10c
Bulkley Dunton Co., Inc. ..... .0832c
Central Ohio Paper Co. (400,000 lbs. lots 325 & 326.) ..... .1137c
Birmingham & Prosser Co. (400,000 lbs. lots 325 & 326.) ..... .1135c
Walker, Goulard, Plehn Co. (2,000,000 lbs. lots 325 & 326.) .. .119c
R. P. Andrews Paper Co. (2,400,000 lbs. on lots 325 & 326.) .. .0828c

No. 326—3,800,000 lbs., 22½x28½—188; rolls, 33 ins. wide, 36 ins. in diameter (6-inch iron or metal capped returnable fiber cores).

Whitaker Paper Co. (3,800,000 lbs. lots 325 & 326.) ..... .0842c
Mudge Paper Co. (400,000 lbs. lots 325 & 326.) ..... .1192c
Old Dominion Paper Co. (3,800,000 lbs. lots 325 & 326.) ..... .114198c
Mead Sales Co. (400,000 lbs. lots 325 & 326.) ..... .10c
Bulkley Dunton Co., Inc. ..... .12c
Central Ohio Paper Co. (400,000 lbs. lots 325 & 326.) ..... .1137c
Birmingham & Prosser Co. (400,000 lbs. lots 325 & 326.) ..... .1135c
Walker, Goulard, Plehn Co. (2,000,000 lbs. lots 325 & 326.) .. .119c
R. P. Andrews Paper Co. (2,400,000 lbs. on lots 325 & 326.) .. .0828c

Pressboard, Colored

No. 352—15,000 lbs.; flat, cut 30x36 ins., thickness .0300 inch. Min. order, 5,000 sheets.

Bulkley Dunton Co., Inc. (per M sheets.) $34.71
R. P. Andrews Paper Co. (per M sheets.) $34.354

Newsboard

No. 360—40,000 lbs., 26x38; No. 100; flat, cut any size, min. 21x32 ins., max 40x52½ ins. (To be trimmed square on four sides).

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W. F. LUCKENBACH, JR. (R)

—appointed to key posts with the Virginia Smelting Co., West Norfolk, Va.—Mr. Luckenbach as manager of industrial sales, Dr. Duncan head of the chemical engineering process improvement section. . . . The appointments are in line with a company "youth" policy, said A. K. Scribner, general manager. . . . The firm is celebrating its 50th Anniversary this year.

Whitaker Paper Co. ..... .0449c
Mudge Paper Co. ..... .0468c
Old Dominion Paper Co. ..... .04579c
Resolute Paper Products Co. ..... .04635c
R. P. Andrews Paper Co. ..... .044c
Paper Corp. of U. S. ..... .0459c

Binder's Board, No. 1 Quality

No. 366—60,000 lbs., No. 1. 25¾x30¾ ins., Nos. 16, 18, 20, 25, 30, and 40; flat, to trim 25x30 ins.

Consolidated Paper Co. (Nos. 16, 18, 25, and 30.) ..... .0742c
Consolidated Paper Co. (No. 40.) . .0763c
R. P. Andrews Paper Co. ..... .0569c
R. P. Andrews Paper Co. ..... .0595c

No. 367—40,000 lbs., No. 1. 25¾x30¾ ins., Nos. 12 and 20; flat, to trim 34x44 ins.

Consolidated Paper Co. (No. 12.) . .0762c
Consolidated Paper Co. (No. 20.) . .0742c
R. P. Andrews Paper Co. ..... .0569c
R. P. Andrews Paper Co. ..... .0595c

Binder's Board, Best Quality

No. 368—5,000 lbs., 20¾x30¾ ins., Nos. 18, 20, 25, 30, 35, 40, and 45; flat, to trim 20x30 ins. and 22x28 ins. Min. order, 5,000 lbs.

Consolidated Paper Co. (Nos. 18, 20, 25, 30 and 35.) ..... .0957c
Consolidated Paper Co. (No. 40.) .. .0968c
Consolidated Paper Co. (No. 45.) .. .0982c
R. P. Andrews Paper Co. ..... .0975c

Chestnut Cover Board

No. 369—30,000 lbs., 25¼x30¼; flat, to trim 25x30 inches, Nos. 17, 19, 21, 25, 31, and 41.

Mead Sales Co. (No. 41 only.) .. .05975c
Resolute Paper Products Co. (Other numbers.) ..... .056c
Bulkley Dunton Co., Inc. (Caliper .060 up.) ..... .056c
Bulkley Dunton Co., Inc. (Caliper .050.) ..... .05975c

Powell River Co. Hits New Peaks

VANCOUVER, B. C.—In 1947 Powell River Co. Ltd., reached new peaks in production, sales and earnings. Wage scales moved up and nearly six million dollars was spent on plant extensions and improvements. The return to shareholders was increased to $2.75 per share from $1.60 in 1946.

Consolidated earnings were $12,188,249 in 1947 compared with $8,091,126 in 1946. Amounts of $1,596,900 were deducted for depreciation and depletion and $4.579,000 for Dominion and provincial income and excess profits taxes. Corresponding deductions in 1946 were $1,185,048 for writeoffs and $3,365,700 for taxes.

Net earnings in 1947 were $6,012,349 or $4.47 per share compared with 1946 net earnings of $3,440,378. or $2.56 per share.

Of the current year's earnings $2,314,438 was reinvested or retained in the business, and despite capital additions and improvements, the working capital Dec. 31, 1947 was $7,267,688 compared to $9,354,837 a year earlier.

Sales of newsprint totaled 244,974 tons in 1947, an increase of 23,692. Sales of unbleached pulp increased by 12,391 tons to 43,871 tons, while sales of miscellaneous products were down 243 tons at 3,819.

Installation of special machinery for utilization of "forest waste" and smallwood has been completed making it possible to harvest this material along with normal larger timber, thus conserving forest resources. Two hydraulic barker units and a whole log chipper came into full production, effecting savings in excess of 10 per cent in pulpwood consumption. Further savings will be brought about by changes being made in the sulphite pulp process. Manufacture of equipment for No. 8 paper machine is well advanced and the machine is expected to come into production late this summer. The report states this will be the fastest and most modern paper machine in the entire newsprint industry.

A second 18,000 KVA generator at Lois River powerhouse has brought total power produced by the company to 95,000 h. p., sufficient to requirements when the expansion is completed. Improvements in the steam plant have effected important savings in consumption of fuel oil.

President Harold S. Foley commends the company's skilled technical and chemical staffs, since practically all of the improvements in manufacturing processes and improvements in design now being incorporated into the new No. 8 newsprint machine have been developed by the company's own staff.

Union Shop for Machinists

BUFFALO, N. Y. — National Labor Relations Board reported on June 2 that 44 employes of the St. Regis Paper Co., Deferiet, voted unanimously for a union shop for the International Ass'n. of Machinists (Ind.).

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3. Methocel solutions ordinarily do not require preservatives.
4. Methocel solutions are neutral.
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Observations on Bleaching Groundwood Pulps*

By Ralph M. Kingsbury[1], Earle S. Lewis[2], and Forrest A. Simmonds[3]

Abstract

The response of groundwood pulps from several hardwood and softwoods to one-stage bleaching with 2% sodium peroxide and with 10% available chlorine as hypochlorite was determined at the Forest Products Laboratory. For the hardwoods, brightness gains of 4 to 19 points were obtained with sodium peroxide and gains of 18 to 24 points with hypochlorites. For the softwoods, the gains were 5 to 10 points with the peroxide and up to 8 points with hypochlorite. The effect of bleaching on freeness varied from appreciable decreases to appreciable increases. There was a definite trend toward increases in tensile strength seemingly large enough to be of practical significance. Small but definite changes in bursting and tearing strengths occurred in some instances. Results indicate that a favorable bleaching effect of hypochlorite on groundwood depends chiefly upon a high initial alkalinity of the order of pH 11, that a low density is preferable to a high density, and that a temperature in the range of 25 to 35° C. is adequate.

As a part of a broad program of study at the Forest Products Laboratory to improve the yield and quality of pulps and thereby to increase the usefulness of various woods for paper making, some information has been obtained on the response of groundwood pulps, particularly from hardwoods, to one-stage bleaching treatments.

In determining the bleaching characteristics of groundwood pulp from the woods thus far studied, sodium peroxide and calcium and sodium hypochlorites were used as bleaching agents. The commercial suitability, general effetiveness, and conditions for application of sodium peroxide as developed by J. S. Reichert and his colleagues are probably so well-known as to require no review here. Data showing the response of groundwood pulps to hypochlorites, however, have not been published insofar as known, although the hypochlorites may have interesting possibilities in that connection.

Previous Work

Prior to the work discussed in this paper, Curran, Schafer, and Pew reported results of bleaching experiments on pulps from sapwood and heartwood fractions of Western hemlock wood *(4)*. The brightness of heartwood pulp was increased about 4 points with 2.6% available chlorine as sodium hypochlorite buffered with 5% sodium hydroxide based on the weight of pulp. The sapwood pulp required 8.3% available chlorine as calcium hypochlorite buffered with 1% caustic for a 4-point gain. With 1.8% sodium peroxide, but no buffer, the brightness of the sapwood pulp was increased 7 points compared to a gain of 15 points with 2.5% hydrogen peroxide buffered with 5% caustic. Reaction temperature in these instances was 28° C., and the density was in the range of 4 to 5%.

Under a Canadian patent, Craig *(3)* described a hypochlorite process for bleaching poplar groundwood contaninated with rot. The conditions were 5 to 6% density, 38 to 45° C. temperature, and 5 to 20% available chlorine as calcium hypochlorite in conjunction with sufficient sodium hydorxide to maintain pH at a preferred value of 10.5 At the end of the bleaching reaction, the process called for the addition of sulphurous acid to a pH in the range of 5 to 5.5.

Brailler and Nowicke, in a U. S. patent *(1)*, also dealt with a hypochblorite process for groundwood, using caustic to adjust the pH to an initial preferred value of 10.5 and sodium metasilicate as a buffer to maintain that value during the reaction. In an example given in that patent of the process, the pulp at 2.5% density was heated to 50° C. and 6% sodium metasilicate, 2% caustic, and 15.5% available chlorine added in that order. Reaction time was 1 hour, after which the pulp was filtered and washed with water. The brightness increase was 5 to 6 points. Although the wood from which the pulp was made was not stated, the small gain in brightness indicates that it probably was a softwood.

Use of Sodium Peroxide in Present Study

Sodium peroxide was used in the present study according to general recommendations of a manufacturer of that reagent. The conditions were 2% sodium peroxide, 5% sodium silicate (41.6° Be. at 60° F., 29% silica, 8.9 % sodium oxide), 0.05% magnesium silicate,

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[1] Chemist, Forest Products Laboratory,[4] Forest Service, U. S. Department of Agriculture.
[2] Physical Science Aid, Forest Products Laboratory,[4] Forest Service, U. S. Department of Agriculture.
[3] Chemist, Forest Products Laboratory,[4] Forest Service, U. S. Department of Agriculture.
[4] Maintained at Madison 5, Wis., in cooperation with the University of Wisconsin.

pulp density 12%, 40 to 43° C. temperature, and an initial pH of 10.2 to 10.7, adjusted if necessary with sulphuric acid. The bleaching reaction was stopped while 10 to 20% of the original amount of peroxide remained unconsumed, by adding sulphurous acid in sufficient quanity to adjust the pH value to 5. Test sheets were formed at pH 5 from unwashed pulp. Percentage values given in the foregoing were calculated on the basis of moisture-free pulp.

Principles in Use of Hypochlorites

A favorable bleaching effect on a groundwood pulp with hypochlorite appears to depend chiefly on slowing the rate of reaction during the first few moments when, as is well-known, a large proportion of chlorine is consumed by pulp. It is also true that further improvements in brightness, although in general small, can be obtained by certain pre- or posttreatments of the pulp, or by the use of sodium silicate as a buffer in addition to lime or caustic.

The initial reaction rate can be retarded by suitable adjustment of density, temperature, and alkalinity. A temperature of 35° C. is considered as the maximum desirable in any instance, and it is believed that lower temperatures are likely to be generally satisfactory. A density of 6% is preferable to higher values, and even values under 6% may be advantageous in specific instances. It was assumed that, in the low density range, the 6% value would be of widest interest with respect to practicability. If, in general, the initial alkalinity is such that the pH value is 11 to 11.5, no further control of this variable is necesary or, posibly, even desirable. There may be instances where a high alkalinity at the end of the reaction would adversely affect brightness or hue or both.

An example of improvement resulting from a pretreatment was observed in the case of a post oak groundwood where removal of tannins by a caustic extraction materially increased the brightness gain for both sodium peroxide and hypochlorite bleaching. In another instance, extraction of a white spruce groundwood with hydrochloric acid resulted in an improvement of 2 points in brightness with hypochlorite bleaching.

Response of Various Groundwood Pulps to Bleaching

The response, chiefly in terms of brightness, of a number of different hardwood and softwood groundwood pulps to bleaching with 10% chlorine as hypochlorite and 2% sodium peroxide, respectively, is shown by the data in Table I.

Brightness and Hue

On the basis of brightness values, the hardwood pulps responded well to hypochlorite and also, with the exception of the black tupelo and sugar maple pulps, to sodium peroxide, with the response being generally better to hypochlorite. The softwood pulps responded better to sodium peroxide than to hypochlorite, but less well to these agents than did the hardwood pulps. Conditions might be found, however, under which the response of tupelo and maple pulps to sodium peroxide would be better than that observed, and the results reported for sodium peroxide are not necessarily optimum.

In general, an increase in available chlorine from 10 to 15% can be expected to give brightness values up to 4 points higher. For some unidentified reason, instances have been observed where a pulp will respond slightly better to sodium hypochlorite than to calcium hypochlorite.

Rather wide variation in brightness gain upon bleach-

TABLE I.—RESPONSE OF VARIOUS GROUNDWOOD PULPS TO BLEACHING WITH HYPOCHLORITES AND SODIUM PEROXIDE

Wood	Bleaching Agent [1]	Alkalinity		Duration, hr.:min.	Brightness		Yellowness [2]	Recession of Brightness		Yield, %
		Initial pH	Final pH		Unbleached, %	Bleached, %		After 1 week in dark, points	After 2 hours under arc light,[3] points	
HARDWOODS										
Quaking aspen	Calcium hypochlorite	11.0	8.4	0:55	63.5	76.0	0.141	1.3	...	99.2
	Sodium peroxide	10.6	8.7	2:30	63.5	76.9	0.114	0.6	...	97.9
Paper birch	Calcium hypochlorite	10.5	8.9	:47	59.0	[4] 75.0	0.212	...	7.9	...
	Sodium peroxide	10.2	8.5	2:00	59.0	75.6	0.161	...	8.6	98.0
Water tupelo	Calcium hypochlorite	11.3	8.2	1:08	66.0	73.9	0.199	2.7	...	99.3
	Sodium peroxide	10.5	9.2	2:15	66.0	76.6	....	0.09	...	100.0
Sweetgum	Calcium hypochlorite	10.7	8.5	1:07	53.5	74.1	....	1.8	...	98.8
	Sodium peroxide	10.4	9.0	2:00	53.5	72.6	....	...	...	100.0
Black tupelo	Calcium hypochlorite	10.9	10.0	:40	61.3	[4] 72.5	0.202	...	...	98.8
	Sodium peroxide	10.3	9.2	2:30	61.3	65.7	....	...	...	97.5
Yellow poplar	Calcium hypochlorite	11.1	8.9	1:00	61.0	72.5	0.182	...	...	98.8
	Sodium peroxide	10.3	8.5	4:00	61.0	70.3	....	...	...	99.0
Sugar maple	Sodium hypochlorite	11.1	9.0	1:00	49.5	[5] 74.2	0.167	2.0	8.7	96.2
	Sodium peroxide	10.5	9.3	1:00	49.5	55.0	0.238	0.6	4.6	96.4
Eastern cottonwood	Calcium hypochlorite	11.4	10.0	:40	52.2	[4] 71.2	0.178	1.0	8.7	99.2
	Sodium peroxide	10.7	9.4	1:00	52.2	66.2	0.189	0.3	4.7	97.3
Post oak [6]	Sodium hypochlorite	11.4	9.3	....	44.6	68.8	....	...	...	98.6
	Sodium peroxide	10.7	9.8	....	44.6	62.1	....	...	...	96.5
SOFTWOODS										
White spruce	Calcium hypochlorite	11.1	9.6	:40	61.4	[4] 67.9	[7] 0.185	2.6	13.1	101.6
	Sodium peroxide	10.4	9.6	:90	61.4	70.9	0.192	0.8	11.5	102.7
Western hemlock	Sodium hypochlorite	12.8	12.6	:30	48.9	[4,8] 54.7	0.370	0.5	...	98.8
	Sodium peroxide	10.2	9.9	1:00	48.9	52.2	0.293	0.2	...	98.2
Southern yellow pine	Sodium hypochlorite	11.4	9.1	1:50	54.5	63.0	....	3.3	...	97.6
	Sodium peroxide	10.3	9.1	3:00	54.5	65.5	....	...	...	97.5
Jack pine [9]	Calcium hypochlorite	10.6	10.4	:15	57.1	56.2	....	0.5	...	100.0
	Sodium peroxide	10.3	9.1	4:00	57.1	61.7	....	0.0	...	96.7
Spruce [9]	Calcium hypochlorite	10.8	10.0	:25	60.2	62.7	....	2.2	...	100.0
	Sodium peroxide	10.3	9.1	4:00	60.2	66.9	....	0.0	...	97.0

[1] Conditions for sodium peroxide other than pH were: 2% peroxide, 5% sodium silicate, 0.05% magnesium sulphate, 12% density, 40 to 43° C. A final adjustment of pH to 5 was made with sulphurous acid. Test sheets were formed at pH 5 from unwashed pulp. Conditions for hypochlorite other than pH, except as noted, were: 10% available chlorine, 6% density, 35° C. Test sheets were formed from washed pulp at pH 7.5, normal for the tap water used.

[2] Calculated from tristimulus values as: $\frac{\text{amber} - \text{blue}}{\text{green}}$. (R. S. Hunter, U. S. Dept. Commerce Circular C 429, July 30, 1942.) The yellowness factor for a bleached chemical wood pulp of 81.8 brightness was 1.0 and that for a porcelain-surfaced working standard of 75.1 brightness was 0.4. The higher the value, the more yellow is the appearance of the pulp.

[3] Single-arc carbon arc light.

[4] After the chlorine was exhausted, the pH was adjusted to 5 with sulphurous acid and test sheets were formed at pH 5 from unwashed pulp.

[5] Two per cent sodium metasilicate was added to bleach mixture.

[6] Before being bleached, the pulp was extracted with 2% caustic for 1 hour at 60° C. and 10% density to remove tannins.

[7] Value for pulp bleached with 15% available chlorine.

[8] Four per cent density, 27° C.

[9] Commercial pulp.

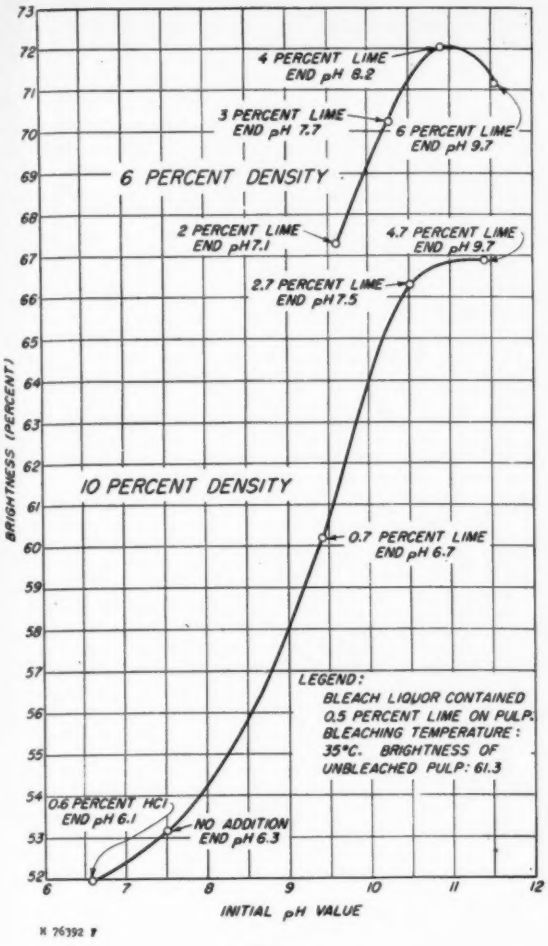

FIG. 1

Influence on brightness of initial pH value in bleaching a black tupelo groundwood pulp with calcium hypochlorite at 6% density and at 10% density.

ing groundwood pulp from the same species but different lots of wood has been observed. The response of the two spruce pulps shown in Table I to 2% sodium peroxide differed somewhat, being a 9.5-point gain for the Laboratory-prepared white spruce and a 6.7-point gain for the commercial pulp identified merely as spruce. Stobo and Russell *(6)* recently reported average brightness gains with 2% sodium peroxide of 4.6 points for Quebec black spruce, 6.4 points for Quebec white spruce, and 7.6 for Newfoundland spruce. Another example of variation is the fact that the gain in brightness obtained for the Western hemlock groundwood pulp referred to in Table I was not so high with either sodium peroxide or hypochlorite as was obtained by Curran, Schafer, and Pew *(4)* for, respectively, Western hemlock sapwood and heartwood groundwood pulps, even though the same conditions were tried. Finally, in this connection, both good and poor results have been obtained with hypochlorite on pulps from different lots of black tupelo and southern pine woods.

The brightness of groundwood pulps when bleached with hypochlorites is less stable than when bleached with sodium peroxide. With respect to hue, the Laboratory has found the yellowness value proposed by Hunter *(5)* convenient for comparing bleached groundwood pulps. This value is calculated by subtracting the reflectance value with a blue filter from the value with an amber filter and dividing the remainder by the value with a green filter. The higher the value, the more yellow is the hue. A difference of 0.02 in these values is easily discernible. Groundwood pulp will often develop somewhat more yellowness upon bleaching with hypochlorites than with sodium peroxide, although, as is shown by the results for the sugar maple and cottonwood pulps, there are instances where the reverse is true. Conventional dyes offer a possibility for compensating for the yellowness, and casual tinting trials indicated that reasonably good results can be obtained in this way with but little if any sacrifice of actual brightness values. The tendency of hypochlorites to develop yellowness may be minimized however, by a suitable combination of kind of hypochlorite, sodnum silicate, and a final acidification with sulfurous acid.

YIELD OF BLEACHED PULP

Inspection of the yield values in Table I shows the range for hypochlorite-bleached pulps using 10% available chlorine was 96 to 100%. There are indications that, in general, where the amount of available chlorine is increased to 15%, the yield may not be decreased further by more than two percentage points.

EFFECT OF BLEACHING ON FREENESS AND STRENGTH

Freenes and strength data were obtained on the pulps from yellow-poplar, the two tupelos, sweetgum, extracted post oak, quaking aspen, and southern pine. No trend was observed in the effect of bleaching with either hypochlorites or sodium peroxide on pulp freeness In some instances there was no change; in some, it was increased as much as 50 milliliters on the Canadian Standard scale; and, in others, it was decreased as much as 60 ml. Instances of definite but very small increases in bursting strength occurred, being more numerous with pulps bleached with hypochlorites. Slight changes in tearing strength resulted in most instances, some being gains and others losses, so that there was no noticeable trend in the effect of any one of the bleaching agents. In the case of tensile strength, however, with both types of bleaching agents, there was a definite trend toward increases of a magnitude that could be important. Increases in tensile strength ranged from 13 to 70% upon bleaching with peroxide and from 40 to 130% with hypochlorite. The southern pine pulp was an exception, since tensile strength was decreased by both hypochlorite and peroxide bleaching but to a greater amount by sodium peroxide.

Influence of Certain Variables with Hypochlorites

DENSITY

As previously stated, density is one of the three chief variables by control of which the apparently important initial reaction rate of hypochlorite can be retarded. It was also stated that a density of 6% was considered to be a practical representative value in the low density range.

That a somewhat higher brightness can be expected when bleaching with hypochlorite in the lower rather than in the higher density range, is indicated by the two curves shown in Fig. I. A density of 6% was better than one of 10% in the case of the pulps from sweetgum, post oak, and the two tupelo woods, but not for those from yellow-poplar and southern yellow pine where no improvement resulted at the lower density. It is possible that a density lower than 6% might be even more satisfactory for some pulps.

TEMPERATURES

There has been no indication of advantage in using

a temperature above 35° C. in bleaching groundwood pulps with hypochlorites. A modearte temperature is essential for the purpose of retarding initial reaction rate. With some pulps, a temperature as low as 25° C. may be necessary to slow the reaction sufficiently to obtain an increase in brightness; with others, lowering the temperature from 35° C. will not result in a further improvement in brightness and will prolong the total reaction time unnecessarily. For example, with the western hemlock pulp at 35° C., the reaction time was 5 minutes and there was a loss of 1 point in brightnes. At 27° C., the reaction time was 30 minutes and there was a brightness gain of about 6 points. On the other hand, with the aspen pulp when the temperature was lowered from 35 to 27° C., there was no further improvement in brightness but the reaction time was increased from 1 hour to 2½ hours. The optimum temperature for a given pulp should be determined by experiment.

Alkalinity

The influence of alkalinity in the bleaching effect of hypochlorite on groundwood is great, as is shown by the curves in Fig. I for a black tupelo pulp at 6% and at 10% density. Even in the high pH range, when the initial pH value was increased from 10 to 11, the brightness was increased 3 points.

Other examples of the effect of alkalinity are given in table II. All of these data on alkalinity indicate very strongly the need for an initial pH value of about 11. As previously stated, the advantage of high initial alkalinity is attributed to retardation of the initial rate of reaction. The emphasis being given high initial pH value, however, does not imply that final pH value is of no importance. Although no close specification for the latter can be made from the results at hand, it appears that it should be definitely on the alkaline side when lime or caustic is being used to control alkalinity. For example, when sodium bicarbonate was used as a buffer with the white spruce pulp (Table II), the final pH value was 8.5 and there was a brightness gain of about 1 point, whereas without the buffer the final pH value was 6.9 and there was a loss in brightness of 3.3 points.

Instances of improvement in the bleaching effect of hypochlorites on chemical wood pulps by the addition of sodium silicates has been reported by Carter (2). The possibility of sodium metasilicate having a beneficial effect when added alone or in conjunction with lime or caustic to the hypochlorite bleaching solution in the bleaching of groundwood was considered briefly. The data in Table II show that there are instances where the use of sodium metasilicate with the hypochlorites is beneficial to final brightness. Its effect on brightness gain apparently varies with the pulp. In addition, the yellowness values were lowered as much as 17%. It was not attempted to identify experimentally the reasons for the beneficail effects of the silicate other than incidental determinations of ash content. With the white spruce pulp, when 3% of the silicate was added in conjunction with calcium hypochlorite, the ash content of the bleached pulp was 2.2 and the brightness gain was 3 points compared to 1.9% ash and about the same gain with no added silicate. When the amount of silicate was increased to 10%, the ash content rose to 4.5%, and the brightness gain was 6 points. Thus, entrained mineral matter may have been a contributing factor in the brightness gain in this instance. On the other hand, with the sugar maple pulp and sodium hypochlorite, when 2% of the silicate was added the brightness also increased 3 points but the ash content did not increase. Those results plus the tendency of the silicate to slow down the reaction rate suggest a buffer action as a favorable factor. The effect of the silicate in decreasing yellowness suggests a possible action as a dispersant increasing the removal of colored reaction products during washing.

TABLE II.—INFLUENCE OF ALKALINITY ON BRIGHTNESS IN BLEACHING GROUNDWOOD PULPS WITH HYPOCHLORITES [1]

Bleaching Agent	Alkali Added: Name	Alkali Added: Amount, % [2]	pH: Initial	pH: Final	Change in Brightness, points
Black tupelo. Brightness, unbleached, 58.3					
$Ca(OCl)_2$	None	...	7.5	6.3	— 5.1
$Ca(OCl)_2$	Na_2SiO_3	2.0	8.8	6.8	+ 3.4
$Ca(OCl)_2$	$Ca(OH)_2$	4.7	11.1	9.7	+ 8.7
$Ca(OCl)_2$	$Ca(OH)_2$	4.0			
	Na_2SiO_3	2.0	11.0	8.9	+14.2
White spruce. Brightness, unbleached, 61.4					
$Ca(OCl)_2$	None	...	8.7	6.9	— 3.3
NaOCl	$NaHCO_3$	12.8	8.9	8.5	+ .9
NaOCl	None	...	11.0	8.7	+ 3.5
$Ca(OCl)_2$	$Ca(OH)_2$	1.0	11.1	9.6	+ 3.5
$Ca(OCl)_2$	Na_2SiO_3	3.0	9.9	8.5	+ 3.2
$Ca(OCl)_2$	Na_2SiO_3	10.0	10.8	9.8	+ 6.1
$Ca(OCl)_2$	$Ca(OH)_2$	4.0			
	Na_2SiO_3	3.0	10.9	10.2	+ 4.4
NaOCl	Na_2SiO_3	3.0	11.7	9.8	+ 3.5
Sugar maple. Brightness, unbleached, 49.5					
[3] $Ca(OCl)_2$	$Ca(OH)_2$	6.0	11.0	10.1	+16.5
[3] $Ca(OCl)_2$	$Ca(OH)_2$	6.0			
	$NaSiO_3$	2.0	11.3	10.6	+17.3
NaOCl	NaOH	2.0	11.4	9.1	+21.5
NaOCl	NaOH	2.0			
	Na_2SiO_3	2.0	11.1	9.0	+24.5

[1] Ten per cent available chlorine was applied .
[2] Based on weight of pulp, moisture-free basis. In addition to the amounts indicated, the quantities of alkalies in the bleach liquors were 0.3 to 0.7% as calcium hydroxide for the calcium hypochlorite and 3.6% as sodium hydroxide for the sodium hypochlorite.
[3] A final treatment with sulphurous acid was used. When that treatment was omitted for a bleach with 6% lime added as a buffer, the brightness gain was lower, being 12.2 points.

Sulphurous Acid

If sulphurous acid is added at the end of the reaction with hypochlorite to destroy residual alkali, it is not necessary to wash the pulp. If enough of the acid is added to lower the pH value to 5, a further increase in brightness of 1 to 5 points will be obtained in many instances. For the pulps of the present study that were treated with the acid, the brightening effect was 1 to 2 points for paper birch, yellow-poplar, water tupelo, and Eastern cottonwood pulps, and about 5points for the sugar maple and white spruce pulps, but there was no increase for the black tupelo pulp.

Conclusions

A comparison made of the response of representative hardwood and softwood groundwood pulps to bleaching with sodium peroxide and with hypochlorites indicates that the hardwood pulps are the more amenable to bleaching. It appears that hardwood pulps can, in general, be brought to the brightness range of 70 to 75 with a proper selection of bleaching treatment. Softwood pulps apparently fall in a somewhat lower bleached-brightness range, although it was indicated that some spruce pulps will be exceptions. It is recognized that there may be other execptions. It is desirable, however, to emphasize that experience shows that variations are to be expected in the response of groundwood pulps from the same species. On the basis of present commercial practice, the bleaching conditions used in the experimental work are thought to be economically feasible.

With respect to brightness, it is indicated that hardwood pulps respond generally better to hypochlorites than to sodium peroxide, but that the brightness of the hypocholrite-bleached pulps is less stable than that of the peroxide-bleached pulps. In general, the hue of hypochlorite-bleached pulps is somewhat more yellow than that of peroxide-bleached pulps, but there are instances where the reverse is true.

There appears to be a general tendency for tensile strength to be increased in amounts that could be important. Hypochlroites seem to have a somewhat greater effect on tensile strength than does sodium peroxide. Freeness may vary appreciably in either direction or not at all. The same is true of bursting and tearing strength, except that the changes are quite small.

It is believed the results reported indicate that hypochlorites have good possibilities as bleaching agents for groundwood pulps, especially those made from hardwoods.

Literature Cited

1. Braillier, Paul S., and Nowicke, Edmund S. U. S. pat. 2,359,891 (Oct. 10, 1944).
2. Carter, John F. *Ind. Eng. Chem.* 18 (3) 248 (March, 1926).
3. Craig, Kenneth A. Can. pat. 416,018 (Oct. 26, 1943).
4. Curran, C. E., Schafer, E. R., and Pew, J. C. *Paper Trade J.* 101, No. 8: 35-41 (Aug. 22, 1935); *Tech. Assoc. Papers* 18: 573-579 (June, 1935).
5. Hunter, Richard S. U. S. Dept. Commerce Circular C 429 (July 30, 1942).
6. Stobo, W. E., and Russell, J. S. *Pulp Paper Mag. Can.* 48 (3), 222-232, 238 (1947).

Sulphite Semi-Chemicals Pulping of Chip Screenings*

By L. C. Jenness[1] and G. L. Nystrom[2]

Abstract

Results obtained by the digestion of various size chip screenings with sulphite acid are presented. Although the cooking medium was acid in all cases, a comparison between the presence of ammonium and calcium bisulphite was obtained. Data are presented on the nature and yield of pulp resulting from acid of various strengths and varying times of cooking. Yields of approximately 70% are reported with little difference in yield resulting from calcium and ammonium base acids. The required cooking time is an inverse function of the acid strength. The resultant fiber is satisfactory for wrapper, linear, or board.

The possible disposal of chip screenings, other than by burning, has long been a matter of some interest. Basic difficulties that are a handicap to the pulping of them are (1) a generally high content of dirt and (2) a widely varying size. This investigation was undertaken to determine (1) the relative yields of fiber that would result from pulping the heterogeneous screenings from softwood and (2) the yields that would result when a given fraction of screenings was subjected to cooking conditions of varying severity.

It was expected that if a bleachable chemical pulp was desired, the fine material would be entirely dissolved during cooking. The object, therefore, was to produce a semichemical pulp, that could be subsequently defibrillated for use as a wrapper, lining, or other paper in which color was of little significance.

There are many references in the literature to the semichemical pulping of various types of wood. Several investigations have been reported from the Forest Products Laboratory, in particular by Curran, Monsson and Chidester *(5)*, Rue *(13)*, Wells *(16, 17)*, and McGovern *(7, 8)*. Routala and Murto *(12)* report an investigation in Finland in 1933. The Asplund *(1, 2)* process of continuous cooking originated in Sweden and was outlined by Lundberg *(6)* in 1941. In this same year Nickerson *(10)* discussed the chemipulper.

In general, the cooking condition described in these references were no more drastic than can result from the use of a neutral sulphite cooking liquor. The reported yields of defibrillated pulp are high, therefore, ranging from 59 to 79%. Since a large tonnage of chemical pulp is made by the sulphite process in the northern United States and Canada, the authors elected to investigate the yields that would result from weak, acid sulphite cooking liquor.

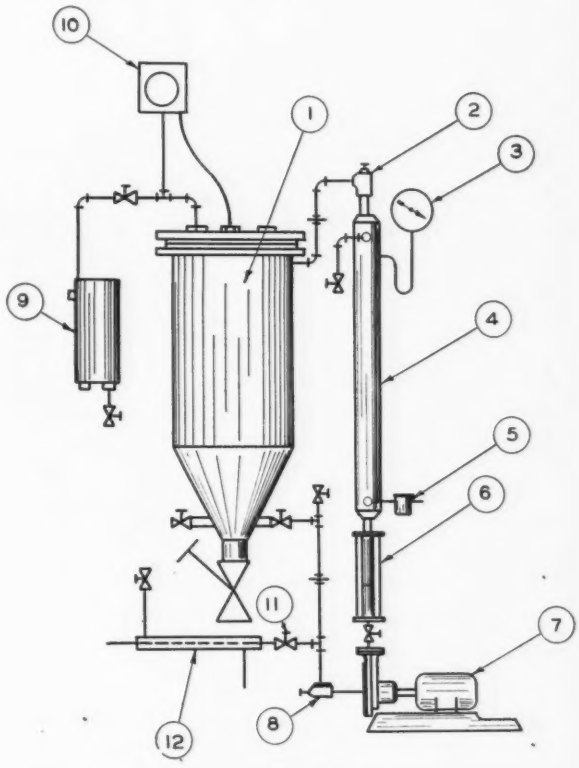

FIG. 1
The Digester

Procedure

The wood used in this investigation consisted of chip screenings from a furnish of approximately 33% fir and 67% spruce. The screenings were classified by a labora-

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TABLE I.—ACID ANALYSES VS. LENGTH OF COOKS

Cook No.	Type Acid Base	Length Cook, hr.	Acid Analysis in Per Cent SO_2: Start Total	Start Free	Start Combined	Finish Total	Finish Free	Finish Combined	Acid pH: Start	Acid pH: Finish
3	Ca	3.00	6.59	5.35	1.24	0.45	0.60	...	1.02	1.37
2	Ca	3.50	6.44	5.21	1.23	0.86	0.61	0.25	1.46	2.06
4	Ca	4.00	6.39	5.20	1.19	1.38	0.87	0.51	1.36	2.22
5	Ca	5.00	6.56	5.31	1.25	1.35	0.82	0.53	1.46	2.40
7	Ca	6.00	6.47	5.20	1.27	0.48	0.24	0.24	1.40	2.65
10	Ca	3.83	3.08	2.09	0.99	0.42	0.33	0.09	2.33	2.38
14	Ca	4.17	3.98	2.93	1.05	0.41	0.39	0.02	2.08	2.09
18	Ca	3.50	5.06	4.06	1.00	0.37	0.37	0.00	1.98	2.16
20	NH_3	5.50	3.07	2.02	1.05	0.54	0.51	0.03	2.40	2.23
22	NH_3	7.50	4.00	2.94	1.06	0.59	0.68	...	2.16	1.87
24	NH_3	4.00	5.05	4.02	1.03	0.51	0.79	...	1.98	2.22
26	Ca	2.83	3.03	1.94	1.09	0.49	0.25	0.24	2.18	2.70
28	NH_3	4.25	3.07	2.01	1.06	0.58	0.30	0.28	2.10	3.84

TABLE II.—PULP YIELDS AND LOSSES VS. LENGTH OF COOKS FOR BEATER TREATED PULP

Cook No.	Type Acid Cook	Total SO_2, %	Length Cook, hr.	Pulp Yield: Before Screening	Pulp Yield: After Screening	Screenings, %	Screening Loss, %
3	Ca	6.59	3.00	71.6	...	...	...
2	Ca	6.44	3.50	70.4	...	...	...
4	Ca	6.39	4.00	62.8	...	...	...
5	Ca	6.56	5.00	52.3	...	...	...
7	Ca	6.47	6.00	57.9	...	...	...
10	Ca	3.08	3.83	68.7	10.1	73.8	11.3
14	Ca	3.98	4.17	53.5	35.8	15.5	17.9
18	Ca	5.06	3.50	55.5	53.0	3.6	0.9
20	NH_3	3.07	5.50	65.1	49.2	12.8	11.7
22	NH_3	4.00	7.50	47.2	41.0	5.1	8.1
24	NH_3	5.05	4.00	45.8	41.1	7.2	3.2
26	Ca	3.03	2.83	89.1	5.5	89.5	4.3
28	NH_3	3.07	4.25	77.7	6.7	90.3	1.0

TABLE III.—PULP YIELDS AND LOSSES VS. LENGTH OF COOKS FOR BURRSTONE MILL TREATED PULP

Cook No.	Type Acid Cook	Total SO_2 Start, %	Length Cook, hr.	Pulp Yield: Before Screening	Pulp Yield: After Screening	Screenings, %	Screening Loss, %
10	Ca	3.08	3.83	68.7	25.4	25.8	37.2
14	Ca	3.98	4.17	53.5	46.1	11.3	2.5
18	Ca	5.06	3.50	55.5	37.2	9.7	23.3
20	NH_3	3.07	5.50	65.1	41.0	28.3	8.8
22	NH_3	4.00	7.50	47.2	40.8	9.8	3.7
24	NH_3	5.05	4.00	45.8	37.6	6.4	11.6

TABLE IV.—SOLIDS, LIGNIN, AND PERMANGANATE NUMBER VS. LENGTH OF COOKS

Cook No.	Type Acid Base	Length Cook, hr.	Solids in Waste Liquor, g./l.	Lignin in Pulp, %	Permanganate Number Pulp
3	Ca	3.00	52.76	....	Over 35
2	Ca	3.50	89.86	23.29	Over 35
4	Ca	4.00	91.25	19.57	Over 35
5	Ca	5.00	97.28	16.31	Over 35
7	Ca	6.00	118.72	14.13	Over 35
10	Ca	3.83	75.30	26.43	Over 35
14	Ca	4.17	94.32	15.25	Over 35
18	Ca	3.50	115.40	12.02	Over 35
20	NH_3	5.50	86.77	16.57	Over 35
22	NH_3	7.50	99.20	16.32	Over 35
24	NH_3	4.00	96.29	3.79	21.03
26	Ca	2.83	26.32	25.29	Over 35
28	NH_3	4.25	37.24	19.93	Over 35

TABLE V.—PHYSICAL STRENGTH TESTS FOR BEATER-TREATED PULP VS. LENGTH OF COOKS

Cook No.	Length Cook, hr.	Total SO_2 Start, %	Beater Treated Pulp: Freeness, min./ml.	Basis Weight, lb./r. 25×40-500	Sheet Thickness, in.	Physical Strength Tests: Burst, %	Tensile, kg./lb./r. 15 mm. width	Tear, g./lb./r.
10	3.83	3.08	61	52.0	0.0096	54	0.011	1.04
			330					
14	4.17	3.98	90	54.9	0.0082	106	0.021	1.22
			335					
18	3.50	5.06	75	57.3	0.0080	119	0.020	1.18
			349					
20	5.50	3.07	80	54.8	0.0082	114	0.020	1.20
			362					
22	7.50	4.00	58	53.7	0.0071	121	0.024	1.34
			356					
24	4.00	5.05	61	53.8	0.0076	125	0.025	1.32
			360					

tory chip screen into three batches: (a) sawdust to 3/16 inch size, (b) ⅛ to ¼ inch and (c) ¼ to ½ in.

A preliminary series of five cooks was made using the (a) material and a calcium base acid of approximately 6.5% total sulphur dioxide, and 1.2% mill combined sulphur dioxide. The lengths of these cooks were varied from 3 to 6 hours.

A second series of six cooks was made on the (b) material. Three of these utilized a calcium base acid and the other three an ammonia base acid. Acid strengths for each type base were 3, 4, and 5% total sulphur dioxide, with a constant mill combined sulphur dioxide of 1%. These cooks were of such duration that the acid strength decreased to a range of 0.4 to 0.8% total sulphur dioxide and required from 3 hours and 50 minutes to 7 hours and 30 minutes time.

Finally, two cooks were made on the (c) material, one utilizing a calcium base acid and one an ammonia base acid. In both cooks the acid strength was approximately 3% total sulphur dioxide and 1% mill combined sulphur dioxide. The cooks were continued until the acid strength had decreased to 0.4% sulphur dioxide, requiring from 2 hours and 50 minutes to 4 hours and 15 minutes.

The equipment utilized consisted of an indirectly heated, stainless steel digester of about 2 cubic feet capacity, represented by Fig. 1; a TAPPI standard 1½-pound laboratory beater; a ½ hp., 100 r.p.m., motor-driven burr stone mill with 8 inch-diameter stone faces; a diaphragm, 0.008 inch cut, flat screen; a Green freeness tester; a Green sheet machine; a Schopper thickness gage; a Schopper tensile strength machine; a Perkins mullen tester, and an Elmendorf tearing strength tester.

The cooking temperature schedule consisted of a 1½-hour penetration period accompanied by a linear increase of temperature to 110° C., followed by a linear increase of temperature to 145° C. in 1 hour, for all cooks. The temperature of 145° C. was then kept constant for the remainder of each cook. A maximum working pressure of 80 pounds gage was maintained by means of gas relief from the digester. Liquor samples were withdrawn at half-hour intervals for analysis by the Palmrose *(11)* method, and the determination of per cent solids and pH.

Upon completion of each cook, the chips were washed by displacement, allowed to drain, and sampled for moisture content. On this basis the dry fiber yield before screening was computed. The charge was then divided into two equal portions. One portion was defibrillated in the beater at a consistency of approximately 8% for a period of 45 minutes, with a weight of 2000 grams on the bed plate lever. The other portion was defibrillated by one pass as a thin slurry through the burr stone mill adjusted to minimum clearance. The stock from each process was separately screened and the yield of fiber and screenings determined. The resultant fibers were beaten for periods of time indicated in Tables V and VI to a freeness of about 350 ml. Hand sheets were then prepared that were conditioned and subsequently subjected to physical tests. The permanganate number and lignin content of the pulp were also determined in accordance with TAPPI standards.

Results and Discussion

The results of all cooks pertinent to this investigation are presented in Table I, with respect to acid analyses and digestion time. The preliminary cooks of (a) material, sawdust to 3/16-inch size, are Nos. 2, 3, 4, 5 and 7. Material (b), ⅛ to ¼-inch size, allows a comparison of calcium and ammonia base acids in cook Nos.

10, 14, 18, 20, 22 and 24. Run Nos. 26 and 28 allow a similar comparison for material (c), ¼ to ½-inch size.

The corresponding pulp yields from these cooks are presented in Tables II and III for both the beater and burr stone mill treated portions of each cook.

It is observed from Table II that the maximum unscreened yield of heterogeneous material (a) was 71.6% when digested with a strong acid for 3 hours, and that the yields decrease rapidly with increase in cooking time. The lignin content of resultant pulps, and solids contents of corresponding waste liquors, are presented in Table IV. It is observed from Tables II and IV that a pulp yield of about 70% results from 3 to 4 hours cooking time with strong acid; the pulp being approximately one-third lignin. As the pulping time increases to 6 hours, the yield decreases in proportion to the amount of lignin removed. Each of the resultant pulps was capable of being defibrillated with increasing difficulty in proportion to the lignin content.

A comparison of cook Nos. 10, 14, and 18, with Nos. 20, 22 and 24, in Table I shows that after materially longer cooking times the acid strength at the end of the cooks is higher for the ammonia base acid. The same relation is noted by comparing cooks Nos. 26 and 28. Since there was little difference in the rate of change of acid strengths during the penetration period, this observation is believed to indicate a slower rate of hydrolysis of the ammonia base acid, under the existing conditions. It is to be noted that the difference in rates of hydrolysis approaches zero at an acid strength of approximately 5% total sulphur dioxide.

Although there is little difference in corresponding yields from the calcium and ammonia base acid cooks, indicated in Table II, the ammonia base acid shows a little more dissolving action, probably due in part to the longer periods of digestion. The same effect is noted in Table IV from the generally lower lignin contents of pulps resulting from ammonia base acid cooks.

A comparison of yields after screening, between Tables II and III, indicates that the burr stone mill has a more abrasive action on the stock than the beater does. This evidence is reflected in larger yields after screening of burr stone treated stock that was less completely cooked, and smaller yields of burr stone treated stock that was more completely cooked.

The results of physical strength tests on handsheets made from beater treated stock of type (b) material are presented in Table V. Although there is little difference between pulps resulting from the calcium base and ammonia base acids, the ammonia base acid pulps are slightly superior. Similar results for the burr stone mill treated pulps are tabulated in Table VI; these show

TABLE VI.—PHYSICAL STRENGTH TESTS FOR BURRSTONE-MILL-TREATED PULP VS. LENGTH OF COOKS

Cook No.	Length Cook, hr.	Total SO_2 Start, %	Basis Freeness, min./ml.	Weight, lb./r. 25×40: 500	Sheet Thickness, in.	Burst, %	Tensile, kg./lb./r. 15 mm. width	Tear, g./lb./r.
10	3.83	3.08	31	52.4	0.0080	45	0.010	0.99
			334					
14	4.17	3.98	25	54.7	0.0075	113	0.022	1.11
			324					
18	3.50	5.06	48	53.8	0.0070	130	0.023	1.28
			340					
20	5.50	3.07	48	56.7	0.0080	108	0.018	1.11
			352					
22	7.50	4.00	34	54.0	0.0074	116	0.022	1.26
			353					
24	4.00	5.05	35	54.0	0.0076	123	0.022	1.24
			352					

no marked differences that could be attributed to this method of defibrillation.

Conclusions

1. A yield of approximately 70% semichemical pulp can be obtained by the pulping of heterogeneous chip screenings with acid sulphite liquor for short periods of time, the required cooking time being in inverse function of the acid strength.

2. The resultant defibrillated pulp is suitable for the manufacture of strong wrapper, liner or board, in which color is of little importance.

3. Ammonia base acid, below a strength of 5% total sulphur dioxide, is consumed less rapidly than calcium base acid during digestion, but when equally consumed dissolves more lignin in preference to cellulose.

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Literature Citations

1. Asplund, A., The Defibrator Method and Its Applications. *Wochbl. Papierfabr.* 71, No. 45: 590-595; No. 46: 607-612 (Nov. 9, 1940). As abstracted in Chemical Abstracts 35: 4200 (1941).
2. Asplund Defibrator. *Paper Mill* 64, No. 49: 64 (Dec. 6, 1941).
3. Cable, D. E., Sulphite Pulp from Spruce. *Paper Trade J.* No. 13: 125-131; No. 14: 136-141; No. 15: 140-151 (Sept. 29, Oct. 6, Oct. 13, 1927).
4. Curran, C. E., Utilization of Wood Waste and Waste Wood Through the Semi-Chemical Pulping Process. *Paper Trade J.* 88, No. 5: 66-68 (Jan. 31, 1929).
5. Curran, C. E., Monsson, W. H., and Chidester, G. H. The Semi-Sulphite Process. II. Experiments in Duplicating Commercial News and Wrapping Paper. *Paper Trade J.* 90, No. 14: 65-68 (April 3, 1930).
6. Lundberg, A. H., Continuous Cooking and Defibration Process According to the Asplund Principle. *Pacific Pulp Paper Ind.* 15, No. 6: 16 (June, 1941).
7. McGovern, J. N., Semichemical Pulp. *TAPPI Bulletin,* No. 53 (May 31, 1945).
8. McGovern, J. N., Use of Bleached Aspen Semichemical Pulp in Groundwood Book Paper. *Tech. Assoc. Papers* 29: 473-478 (June, 1946).
9. New Defibrator Pulps Demonstrated. *Southern Pulp Paper J.* 3, No. 2: 23; No. 3: 21 (July, August, 1940).
10. Nickerson, A. W., The Chemipulper. *Tech. Assoc. Papers* 24: 461-462 (June, 1941).
11. Palmrose, F. V., A Mill Test for the Exact Determination of Combined Sulphur Dioxide. *Paper Trade J.* 100, No. 3: 29-31 (Jan. 17, 1935).
12. Routala, O., and Murto, J. O., Semi-Chemical Pulp from Waste Wood of Coniferous and Deciduous Trees. *Finnish Paper and Timber J.* 15, No. 1: 20-22; No. 2: 56, 58-60; No. 3: 95-96, 98-100; No. 14: 540-543 (Jan. 15, 31; Feb. 15; July 31, 1933). As abstracted in Chemical Abstracts 27: 2296, 2802, 5534 (1933).
13. Rue, J. D., Wells, S. D., Rawling, F. G., and Staidl, J. A., A Semi-Chemical Pulping Process. *Paper Trade J.* 83, No. 13: 50-53 (Sept. 23, 1926).
14. Sutermeister, E., "Chemistry of Pulp and Paper"; 3rd Edition. New York, John Wiley and Sons, 1941.
15. Traquair, J., and Rawling, F .G., U. S. pat. No. 1,843,467 (Feb. 2, 1932).
16. Wells, S. D., Beating with Rods. *Pulp Paper Mag. Canada* 26, No. 10: 301-303 (Mar. 8, 1928).
17. Wells, S. D., The Marcy Rod Mill in the Paper Industry. *Paper Trade J.* 85, No. 17: 115-116 (Oct. 27, 1927).

Colorimetric Methods of Analysis

D. Van Nostrand Company has just isued The Third Edition of "Colorimetric Method of Analysis" by Foster Dee and Cornelia T. Snell, chemical consultants (238 pp. 6 x 9). The authors have attempted to give rather complete treatment to this subject and to cover the tremendous volume of material published on the subject in the ten years that elapsed since the second edition was issued.

Among the subjects covered are: colorimetric methods; comparison with liquid and solid standards;

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The McGraw-Hill Book Company has just issued "Chemical Engineering Fundamentals" by C. G. Kirkbride of the Houdry Process Corporation and formerly professor of Chemical Engineering of the Texas A & M College. (419 pp 6 x 9).

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Unlike most books on this subject the author departs from the stereotyped approach to the subjects namely, the consideration of the unit processes as an end in themselves. Rather, he treats the subject as a whole and presents the basic fundamentals, in a way that marks them adaptable to any application.

The subjects included in the text are: human relations in Chemical engineering, useful mathematical tools, important concepts of physics and chemistry, the material balance, the energy balance, static and dynamic equilibria, the economic balance, and presentation of technical results.

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